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**EXPERIMENTS TO DETERMINE THE ANTI-
SEPTIC VALUE OF BORIC ACID.**

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The real antiseptic value of boric acid has been a subject of considerable dispute. Owing to the objectionable odor of iodoform, and its irritant effect on the skin, many have tried to substitute boric acid in its place. The published reports about the latter are very conflicting. Some assign to it decided antiseptic virtues, while others claim, on the basis of experiments, that it is not antiseptic at all, and that bacteria will flourish in a saturated solution of it. Curiously enough both these contradictory assertions are in some sense true. Boric acid is so decidedly anti-putrefactive that it is constantly sold and successfully used to preserve fresh meat for market, and a piece of muscular tissue immersed in a saturated solution of it will remain free from odor or softening for weeks, and, probably, for years; yet in that same solution a few living micrococci may sometimes be found, and at least one species of mycelium sprouts freely on the immersed muscular specimen. As boric acid on account of its cleanliness, its freedom from odor, and its absolute safety, is very convenient for extemporaneous use, I have made the following experiments with solu-

tions of it prepared with the hydrant water from Lake Michigan, just as one would find it convenient to do in visiting patients in any of the Lake Shore towns. The water of the streams and wells of adjacent regions does not differ enough from that of Lake Michigan to materially change the results.

It will be noticed that while others allege that they have found the micrococci living in saturated solutions, I was unable to discover any in solutions stronger than one per centum. A saturated solution of boric acid in the water of Lake Michigan at the temperature of 70° Fah., contains about 4 per centum of the acid. The experiments were made in six-ounce bottles of water containing the respective percentages of boric acid mentioned at the head of the columns.

In each bottle was suspended about two drams of fresh pork muscle. Bottle No. 1 contained simple hydrant water; No. 2, one per centum solution of boric acid; No. 3, two per centum solution; No. 4, three per centum solution; No. 5, a saturated solution; No. 6, a solution of what is called *glycerol* of boro-glyceride, that is to say, the solution experimented on contained 4 per centum of boric acid, 12 per centum of glycerine, and 84 per centum of water.

From these experiments it is evident that the saturated solution of boric acid in

ordinary use among us is abundantly antiseptic, so far as preventing putrefaction is concerned, but that it does not prevent the growth of mycelium of, at least, some species, and probably does not prevent the development of every species of bacteria and micrococc. We may conclude, therefore, that while boric acid, in all probability, is a good antiseptic for practical purposes, we have not a certainty that every injurious microorganism will be destroyed by it. In

article by Dr. Joseph Zeissler, of this city.¹

It will be observed that in the sixth experiment the presence of glycerine seemed to increase the efficiency, so that even the mycelium did not appear. My final conclusion is that for a multitude of purposes boric acid is a very valuable article and convenient for use on account of its cleanliness, freedom from odor, and the total absence of any caustic or irritant qualities, but that in the present state of our knowl-

TABLE OF EXPERIMENTS to determine the antiseptic value of Boric Acid by suspending two drachms of fresh muscle in extemporaneous solutions of the Acid in Lake Michigan hydrant water—six ounces to each bottle.

Days.	Experiment No. 1. Hydrant water alone.	Exp. No. 2. One per cent. of Boric Acid.	Exp. No. 3. Two per cent. of Boric Acid.	Exp. No. 4. Three per cent. of Boric Acid.	Exp. No. 5. Saturated solution Boric Acid.	Exp. No. 6. Boric acid 4 pr. ct. Glycerine 12 " " Water 84 "
1	Solution turbid.	Meat blanched; solu-tion clear; no smell.	Meat blanched; solu-tion clear; no smell.	Meat blanched; solu-tion clear; no smell.	Meat blanched; solu-tion clear; no smell.	Meat blanched; solu-tion clear; no smell.
2	Decidedly putrid.	Slightly turbid; no smell.	ditto.	ditto.	ditto.	ditto.
3		More turbid; my-celium on the meat; no smell.	"	"	"	"
4		No smell; myceli-um growing; mov-ing micrococc.	No smell; myceli-um appearing; no micrococc.	Mycelium appears; no smell; no mi-crococc.	Mycelium appeared as in preceding experiment.	"
5		ditto.	ditto.	ditto.	ditto.	"
6		"	"	"	"	"
7		"	"	"	"	"
8		"	"	"	"	"
9		"	"	"	"	"
10		"	"	"	"	"
11		"	"	"	"	"
12		Swimming micro-cocc; mycelium abundant; no smell; meat firm.	No micrococc; abun-dant myceli-um; no smell; meat firm.	No micrococc; abun-dant myceli-um; no smell; meat firm.	No micrococc; abun-dant myceli-um; no smell; meat firm.	No micrococc; no mycelium; no smell; meat firm; many boro-gly-ceride crystals at bottom of bottle.

short, it lacks the all-conquering energy of the corrosive sublimate solutions. We may conclude with reasonable certainty that, used in a dry form to pack foul ulcers and septic wounds, it will be of decided value on account of not only its antiseptic power, but also its freedom from any caustic or irritating qualities. Decided power is assigned to it when packed into the urethra in dry form to arrest recent attacks of gonorrhœa, as detailed in a recent

edge it is not safe to rely upon it exclusively in cases which demand the most decisive and energetic antiseptic qualities. In short, where life is at stake, and may be dependent, to a great extent, on the energy of the antiseptic, it is better at present not to repose too implicit a confidence in boric acid.

6 SIXTEENTH STREET.

¹ Zeissler: A Novel Method of Treating Gonorrhœa. Western Medical Reporter, Jan., 1889.

THE DETECTION OF THE BACILLUS TUBERCULOSIS.¹

BY FRANK BILLINGS, M.D.

The form of the bacillus tuberculosis is not characteristic and it cannot, therefore, be differentiated from other pathogenic and non-pathogenic bacteria by its form alone. It is a very thin bacillus, about two to five micromillimetres in length (from one-fourth to one-half the diameter of a red blood-corpuscle). It is usually slightly bent.

Like all protoplasmic cells it has an affinity for the aniline colors, and its reaction to these colors is characteristic when the aniline is combined with a mordant.

To elicit the characteristic reaction of the bacillus to the aniline colors it is necessary to proceed in a methodical manner: The instruments used, forceps, needles, etc., should be clean, sterilized by heating in a gas or other flame. The cover glasses and slides should be cleaned in fine alcohol.

The material supposed to contain the bacilli should be collected in a clean vessel, and when collected should be protected from contamination by the air, etc.

The material should be spread in a very thin layer upon a cover glass, by means of a needle or by placing a small amount upon one glass and then pressing another cover glass upon the first, thus making a thin layer upon two cover glasses. The thin film is then allowed to dry upon the cover glass, or the drying may be hastened by warming it over a gas flame. Then, when dry, by passing the cover glass quickly two or three times through the flame, the albumin usually present in the medium fixes the film upon the glass.

The cover glass is now ready for the aniline dye. One may use any color, but aniline violet, methyl blue, or fuchsin is usually employed. Fuchsin is the most often used, because its bright red renders the bacilli more prominent to most observers; and too, one may use with it, better

than with the other colors, a contrast color for the ground substance on the cover glass.

The color used must be combined with a mordant, which so fixes it in the bacillus of tuberculosis as to render it very much less susceptible to the bleaching effects of the mineral acids, while it does not so affect other bacteria, with but two exceptions, which I shall mention later.

There are several substances that may be used as a mordant; aniline water, carbolic acid, tannic acid, and others. Aniline water was first used and is still by some, but the mordant now in common use and the one used by Professor Koch, is carbolic acid. It has the advantage over aniline water that a solution of it with the color may be kept indefinitely, while the aniline water solution must be made each time it is used.

The following solution of fuchsin (Ziehl & Neelson) is a satisfactory one in every way:

Take of Fuchsin	1 part
Acidi carbolic.....	5 parts
Alcoholis.....	10 parts
Aque destillata.....	100 parts

Mix in the order given. A few drops of the staining fluid are placed upon the cover glass, held in a forceps with the film upwards over a gas or alcohol lamp, Bunsen's flame, until the solution boils or gives off steam. It is then washed in water and is ready for the process of bleaching.

For bleaching, any of the mineral acids may be used. A twenty-five to thirty-three per centum watery solution of hydrochloric, nitric or sulphuric acid is used. Koch prefers nitric acid; his laboratory assistant uses sulphuric, while at Vienna hydrochloric is chiefly used. It is probably immaterial which acid is employed.

The stained cover glass is immersed in the acid solution for a moment, then in a seventy per centum water solution of alcohol, and finally washed in water. The immersion in acid, alcohol and water suc-

¹ Read before the Chicago Medical Society on February 18.

cessively being repeated until the color is almost or quite bleached. This process leaves the bacillus tuberculosis colored red while the ground substance and all other bacteria, with the two exceptions mentioned, are bleached. The mordant used enables the bacilli of tuberculosis to retain the color. Too long immersion in the acid will also overcome the action of the mordant and render the examination nil. The cover glass should be finally thoroughly washed in water to remove all acid, otherwise the slight amount of acid remaining will gradually fade the color and in a few months the preparation will become worthless.

The cover glass may now be mounted on a slide in water or glycerine, or, after drying, in Canada balsam. One may, however, use a contrast color,—such as methyl blue for the ground work. It is only necessary to float the cover glass, with the film downward, upon a one to two per centum watery solution of the methyl blue for five minutes. The excess of blue color is washed off with water, the cover glass dried and mounted. The bacilli of tuberculosis will be seen stained red and other elements will be blue.

For tissue containing the bacilli it is necessary to immerse the sections for from twelve to twenty-four hours in the fuchsin solution. They are then decolorized by immersion in the acid solution, the alcohol, etc., until only a faint redness remains. The sections are then dehydrated in alcohol and cleared up in oil of cloves. When mounted the bacilli are seen red, the tissue decolorized. The methyl blue may be used as a contrast color, also, for sections.

To easily detect the bacilli so prepared, one should have a microscope magnifying at least 450 diameters; however, the bacilli may be seen with a less powerful glass. An ordinary stand and substage will do for cover glass preparations, but an Abbé substage condenser is a decided aid to the discovery of the bacilli in cover glass preparations, and it is absolutely necessary in examining sections.

The discovery of the bacillus tuberculosis in the excretions, secretions or exudates examined is positively diagnostic of a tubercular disease. When it cannot be detected its absence is not of much diagnostic value, for it may be present in such small numbers as to render its detection difficult or impossible. When it is not found readily, repeated examinations of material collected on different days must be made to make its absence of any importance as a negative sign.

The bacillus is most easily detected in the sputa of tuberculosis pulmonum. It is most difficult to detect it in the blood, even in cases of acute general tuberculosis.

It is not usually difficult, as a rule, to detect it in the exudates into serous cavities; as in tubercular pleuritis, tubercular peritonitis and tubercular synovitis. I have found the bacillus in the contents of a distended fallopian tube.

In tubercular disease of bone it is usually present in the cheesy infiltrate, but it is difficult to find it in the pus from sinuses in tubercular disease of bone.

It is difficult to detect the bacillus in the urine because of the bulk and the decomposing effect it has on the bacillus. *Then the preputial and labial smegma bacillus* gives the same color reaction as the tubercle bacillus, and its form is so nearly like the bacillus of tuberculosis that it cannot be differentiated from it, with the microscope. The presence, therefore, of a bacillus in secretions from the genitals, giving the color reaction and presenting the form of the bacillus tuberculosis, is not here, as it is elsewhere, a positive sign of tuberculosis.

In tubercular disease of the skin and mucous membranes the secretion therefrom sometimes contains the bacillus. Sections made from tissue taken from tubercular ulcers usually yield the bacillus.

The bacillus of leprosy is nearly like the tubercle bacillus in form, and it gives the same color reaction. The clinical course

of leprosy is so distinct, and the disease so rare in this climate that it is not difficult to exclude it when considering a tubercular disease.

235 STATE STREET.

REPORT OF A CASE OF TRANSPLANTATION OF SKIN FOR THE CURE OF ECTROPIUM.¹

BY H. GRADLE, M.D.

The young lady whom I wish to exhibit to you to-night, in order to show the result of an ectropium operation, has had ectropium of the lower lid of the eye since her childhood, due at that time to some form of ulceration, probably lupus. Ten years ago some form of operation was performed without beneficial result. When first seen the lower lid was everted throughout almost its entire extent, the conjunctiva exposed, and, of course, in an abnormal and irritated condition. The scar underneath the lower lid, extending externally to the external canthus, had pulled the skin of the lid down and had caused it to adhere to the inferior rim of the orbit.

On September 24, 1888, I made the usual form of ectropium operation by cutting through the skin in a line parallel to the ciliary border and some three millimeters below it, and liberating it from the scar by undermining until the lid could be replaced satisfactorily. Into the gaping wound I then transplanted a pediculated flap taken from the healthy skin on the malar prominence immediately adjoining the external canthus of the eye. The flap was some twelve to fifteen millimeters wide, but, of course, shrunk at once so as seem about right for the width of the wound, which varied from eight to ten millimeters. The flap was attached by means of three silk sutures, while the wound left by the transposition of the flap was united by a continuous catgut suture. The operation was done under strictly antiseptic precautions.

On removing the dressing, four days later, complete union was noticeable, but two days subsequently the epithelium of the flap began to peel off at its distal extremity and the entire transplanted flap changed into an ulcerated surface without extension of the ulceration below the papillary layer. Within some ten days the ulceration had healed, but the scar shrunk again to such an extent that the result of the operation was not nearly as satisfactory as anticipated, although there was quite an improvement over the previous condition.

The attempt to prevent a downward pulling of the lid by applying adhesive plasters traction between the forehead and the cheek for some weeks gave no satisfactory result.

December 4th I repeated the operation, liberating the skin by transverse incision following the edge of the lower lid about two millimeters from the insertion of the cilia, and dissecting the lower lid away from the cicatrix until it resumed its place to a normal extent. In order to fill up the resulting gaping wound, I took a flap this time from the skin of the forearm—of course, without pedicle. As recommended by Wolfe and by E. Meyer, after having antisepicised the arm, a flap considerably larger than the gaping wound was transfixed with a Gräfe's cataract knife, and nearly, not but quite completely cut off. A strip of adhesive plaster (gold-beater's skin) was then attached to the flap and the latter cut off entirely and placed on the wound of the eye-lid, where the overlapping adhesive plaster retained it in position without the necessity of sutures.

On the fourth day the dressing was changed and complete union was found. Within the next five days a narrow strip along the inferior border of the transplanted flap became mummified, evidently because it overlapped the healthy skin. When this was detached no ulcerating surface could be seen underneath. The result was therefore a complete success.

¹ Read before the Chicago Medical Society, February 27.

Within the last two months a very slight retraction has again occurred, but not to an extent requiring any further interference.

63 STATE STREET.

EXTRACTS AND ABSTRACTS.

Transplantation of Testis from Perineum.

—An interesting case is reported from the Hospital for Sick Children, London, and which came under the care of MR. EDMUND OWEN. He says:

The condition of malposition of the testis in this case is of considerable rarity, known as ectopia perinaealis, one of the varieties of ectopia testis, the other being ectopia cruralis, in which the testis has left the abdominal cavity by the crural ring. It is usually the left testis which is displaced into the perineum, but the right may be in this abnormal position. Hutchinson met with a case in which both were so displaced, but this is the only one on record. The condition is diagnosed early in life, as it is usually congenital. Godard, however, recorded an instance of its descent at the age of twenty-five. Most of the other instances in which a late descent (or dislocation) has been supposed to have occurred are doubtful, as in the case of the soldier, aged twenty-four, on whom Partridge operated. It has, however, been unexpectedly met with by Ricord when epididymitis had set in, and by Zeis, who was about to perform lithotomy on a boy of fifteen. The cause of the malposition of the organ has been ascribed to irregularity in the attachment of the gubernaculum testis; in more than one of the cases it has been felt as the retaining-band; in others, this band has been seen at the operation for reposition and described as the gubernaculum. Symptoms referable to its presence in the perineum are usually the result of injury; but, as in Annandale's case, pain may be caused by walking or running, or, again, by sitting, and more especially by riding. Attempts to replace it in the

scrotum by other than operative measures have usually proved abortive, and, as it is frequently well developed, it is not advisable to perform castration unless it be associated with congenital hernia, as in the case operated on by Surgeon Flanagan at Mhow, or on failure of the operation for reposition. The earlier operations for replacement were unsuccessful. Curling, in the case of a child, used wire sutures and a pad over the perineal sac; he found the testis difficult to transplant; suppuration followed, and the patient died at the end of a fortnight, from exhaustion and diarrhea. Adams, who attended a child (aged eleven weeks) at home after operation, lost his case from erysipelas and phlebitis fourteen days later; inflammation extending along the funicular process. He secured the testis in the scrotum by means of a catgut stitch through the cut gubernaculum. Partridge, in the case of the soldier already referred to, used deeply placed subcutaneous sutures and applied a pad to the perineum. As a result of a consideration of the causes of failure in his case, Adams made certain suggestions, recommending that a child should be permitted to attain the age of two or three, and that the testis should be secured in the scrotum by means of sutures. The employment of the antiseptic treatment has been most successful. Marshall, in a boy of sixteen, tied the testis to the lowest part of the scrotum by means of a catgut stitch, and used antiseptic gauze; this case was successful. So was the operation when done by Annandale at an earlier period in a boy aged three years; a catgut stitch was passed through the testis and bottom of the scrotum, and antiseptic treatment employed. The success attained by Annandale and Marshall and in the following case will doubtless be imitated in the future, now that the principles of the operation are more fully recognized. Some years ago Mr. Owen brought forward the case of an infant with displaced right tes-

tis in which he did not recommend operative treatment. There are various questions of further interest suggested by the following case, such as the question of malignant disease in misplaced or undescended testicles, into which we have not space to enter. For the following reports we are indebted to Mr. R. C. Priestley, M.A., registrar.

CASE 1. *Transplantation of testis.*—L. C.—, aged two years and seven months, was admitted on September 28th, 1888. The child is small for his age, and is unable to talk, but his limbs and head are well formed. On examining the genital organs, the right testicle was found well developed, and in the usual situation; the left testicle was also of normal size, but was situated in the perineum, to the left of the median raphe; the cord of the left testicle was apparently as long as that of the right, as the two organs were on a level with each other. The left half of the scrotum was small, and drawn over to the right side. On Oct. 3rd, Mr. Owen made an incision over the left half of the scrotum, through which the misplaced testicle was reached, and freed from adhesions. There was no difficulty in placing the gland in the scrotum; but, as it obstinately slipped back into its original position, a deep suture was passed from one side of the left scrotum to the other, behind the testicle, which effectually maintained it in its new position. The edges of the wound were drawn together by a continuous suture, and drainage was provided for by a narrow piece of tissue inserted at the lower angle of the wound. The wound united readily, except at one spot, where a very small slough separated, and when the child quitted the hospital, a fortnight later, the left testicle appeared quite natural. The child has since been inspected, and the result of the operation has, apparently, left nothing to be desired.

It not infrequently happens that a testis which has failed to complete its descent, or

has wandered into the groin or perineum, is imperfectly developed. In such cases it is a question whether it is deserving of surgical attention—that is, with a view to transplantation. If it be a fact, as some maintain, that the imperfectly developed gland is specially prone to malignant disease, it would, no doubt, be advisable to remove it without delay. And if, on the other hand, it is associated, as I have sometimes noticed, with a reducible inguinal hernia, ablation should also be practiced, so that the inguinal canal can be scarcely blockaded. It would be on merely sentimental grounds that, in such circumstances, any desire were felt for its preservation. But, given a healthy child with a well-developed and wandering testis, a simple operation such as that described above is not only justifiable, but, for every reason, expedient. As regards the nævus, I do not think that any other method of treatment could have given so prompt and thorough a result. Had it been treated by the old method of transfixation and ligature, the infant would not improbably have sunk exhausted on account of pain and suppuration. Moreover, the deepest parts of the mass could not have been destroyed by this means. Electrolysis could scarcely have dealt with it in less than three operations. In removing a nævus by the scalpel, it is necessary to keep well beyond the nodules of vascular fat which surround the spongy and growing mass. Then, with plenty of pairs of catch-forceps, the whole of the tumor can be cleanly removed without haemorrhage or shock; and, as regards the operator, without anxiety or apprehension.
—*The Lancet*, Feb. 9, 1889.

How to Irrigate the Puerperal Uterus.—

In an article on "Irrigation of the Puerperal Uterus" (*Southern California Practitioner*, Feb., 1889) DR. WALTER LINDLEY says:

The instruments used are a fountain syringe holding a gallon, with a vaginal

nozzle and a double uterine irrigation tube. The tube we use was made by Lentz, 18 North 11th street, Philadelphia. It is thirteen inches long, one and one-half inches in circumference, and is well curved. The openings for the entrance of fluid are small ($\frac{1}{8}$ inch diameter) and numerous and extend over about two inches of the upper surface of the end of the tube. Deep grooves on the sides and large openings ($\frac{3}{8} \times \frac{1}{8}$ inch) into the return channel, extending over five inches of the under surface of the uterine end of the tube, provide for the free exit of the injected fluid. The larger the tube the less likely are we to have choking of the exit channel. A tube of smaller diameter is used to wash out the non-puerperal uterus after operations on its cavity, as curetting, etc.

First, instruments and hands are thoroughly scrubbed with soap and water, and soaked in tartaric-sublimate solution 1:500. The double tube must be boiled for half an hour before each irrigation, and afterward thoroughly cleaned with nail-brush. Clean out each hole carefully.

About three inches from the edge of the bed a small pillow is placed lengthwise, and over this an ample piece of rubber cloth so arranged as to form a spout passing into a bucket. The patient is placed across the bed, over the rubber cloth, the hips projecting slightly over the edge of the bed. The head and shoulders are comfortably supported by pillows; each leg is well wrapped in a separate blanket, the feet resting on two chairs placed widely apart. After the pudential hair has been removed by scissors and the external parts thoroughly cleaned, the vagina is thoroughly cleaned by injecting a gallon or more of warm water, through a hard rubber vaginal nozzle, the holes of which have been greatly enlarged by a penknife. After the vagina has been thoroughly cleaned, a quart of sublimate solution 1:4000 is allowed to run into it. Take care that the cleaning process is extended into all the

folds and recesses of the vagina and cervix, by moving the nozzle in all directions. This must not be left to the nurse.

Now the forefinger of the left hand (which has, as a matter of course, been thoroughly disinfected, warmed and greased) is gently passed into the uterine cavity, the palm of the hand hugging the anterior vaginal wall, and if necessary the uterus being pressed gently downward. If any foreign matter, as clots or membranes are detected, the patient is etherized, the well-greased hand is inserted into the vagina, and one or two fingers into the uterus, which is gently but thoroughly emptied by repeated crooking motions of the fingers, adhesions to the endometrium being separated by gentle scraping with the finger nail.

The uterus having been thoroughly emptied, or having been found empty, the left forefinger is again inserted past the marked flexure always existing in the puerperal uterus at or near the internal os, and the double tube passed along it to or near the fundus. *No force must be used.* The procedure greatly resembles the passage of a sound into the male bladder. The flow is started before the tube is inserted to prevent the entrance of air.

Nothing but pure hot water should be used until the genital canal is thoroughly cleaned. Then a quart of tartaric sublimate solution 1:8000 may be used, and should be followed by more hot water.

The tube is allowed to remain for a few seconds, so that all fluid may drain from the uterus. The patient is then turned well over on her side, so that the vagina may empty itself.

The vaginal lesions should now be thoroughly dusted with iodoform (or if diphtheria exists the patches, according to Lusk, should be painted with equal parts of a mixture of persulphate of iron and compound tincture of iodine), and a hollow suppository holding half a drachm of powdered iodoform pushed well into the uterus.

To Avoid Sublimate Poisoning: 1. Where intra-uterine irrigation is used in the absence of sepsis, use no sublimate, but plain hot water or salt and water. 2. If the urine is albuminous and scanty, use no mercury. 3. If the urine is slightly albuminous and copious, or if the patient is profoundly anaemic, do not use more than a pint of a solution of 1:8000. 4. Always use tartaric acid and sublimate tablets or powders; dissolve thoroughly in a small quantity of water and mix carefully with a definite quantity of hot water in a pitcher, from which pour into the irrigator.¹ 5. Always use fountain syringe, and for the uterus a double tube, so as to insure the return of the solution. If for any reason the fluid fails to run out as fast as it flows in (if not through the reflux tube, by way of the channels at its sides), shut off the flow. The irrigator should not be raised more than three feet. 6. Precede by copious irrigation with hot water to wash out blood, etc., which may form with sublimate adhesive albuminous compounds, which may in time be absorbed. Follow by a quart or two of hot water to insure the evacuation of all the sublimate solution. 7. For the uterus use a solution not stronger than 1:8000 and not more than a quart once daily. 8. For the vagina use a solution not stronger than 1:4000 and not more than a quart twice daily.

Irrigation used in the above way is, we believe, a practice almost devoid of danger. We have made more than one hundred and seventy-five irrigations with the double tube and fountain syringe, with no untoward results except in two cases an unimportant rise of temperature, and in one a severe but harmless chill, and even these

¹ Campbell, twenty-first and Pine streets, Philadelphia, makes the only really good tablet in the market. It is composed of sublimate about 4 grains, and tartaric acid about 20 grains. One to a pint = 1:2000. This formula, which is Laplace's, may of course be imitated by any apothecary and put in powder form in waxed paper. It has very great advantages over other formulæ.

slight accidents we feel certain might have been avoided by greater care. Yet irrigation of the puerperal uterus will always be a procedure requiring great care and judgment and some skill.

Leprosy Cured by Unna's Method.—DR. DRECKMANN, of Vienenburg, reports a case of leprosy cured by treatment in the following manner:

The lower part of both legs and both feet, as well as both forearms and hands, are daubed twice a day with 10 per centum pyrogallic ointment, the remainder of the body with 10 per centum chrysarobine ointment by means of a stiff bristle-pencil or of a tooth-brush. The face, with the exception of the lower jaw region, is covered once a day with strong salicyl-creosote plastermull, daubing the latter with zinc-glue. This process, I may say, is the soul of the whole treatment, and has remained the same in its essential features from beginning to end, although with various modifications and experiments. To mention the most important among these: Experiments were tried with stronger ointments, pyrogallol up to 15 per centum, chrysarobine even as high as 25 per centum ointments. With pyrogallol, the experiment was punished almost regularly by a pyrogallol intoxication after 2 or 3 applications of the ointment; chrysarobine, which was decidedly less noxious, only induced an increased irritability of the skin. In both cases, the treatment was interrupted for 1-2 days, to subject these conditions to the proper treatment.

If it is desired to increase the intensity of the treatment, Unna's plastermulls are to be recommended. Many nodosities, especially on the back of the hand, which remain almost unaltered by the ointments, disappeared after 2-3 applications of the plaster.

A nodule in the lobe of the ear, having the size of a pea, and doubtless of leprous nature, vanished forever in one night

before the chrysarobine plaster, in which I enveloped the whole concha. Being surprised myself by this result, I left this ear without any further treatment, in order to see whether the nodule might not return in one form or another. There was never any new disturbance.

In fact, I have succeeded in removing definitely the most obstinate indurations of the skin by means of plaster. Pyrogallol plasters are preferable to chrysarobine plasters with regard to efficiency.

Single nodules in a favorable location which allows to encircle them with the fingers, may simply be taken out with the knife; the wounds, caused by the operation, heal exceedingly well, and I have never seen in any place a reappearance of the induration. For I will not omit to mention that it happened to me several times that a nodule, which I had covered with a plaster, had disappeared from that very place on the following day, but only to be located near by, although in a more enlarged and mollified form. For this reason, general treatment should never be suspended, as long as there is one single nodule to be found somewhere.

Special attention should be bestowed on the treatment of the face. The well known Facies leonina, with its sombre, repulsive, fear inspiring expression has to be improved by all means, not only because it is a morbid condition, but also, because the patients themselves attach considerable importance to this improvement which saves them from being immediately recognized as lepers. For this purpose, I have not only removed the existing indurations by means of ichthyl and chrysarobine plasters, but I have radically detached the skin more than a dozen times by means of salicyl-creosote plasters, daubed with zinc-glue. For the purpose of finally rendering the complexion as nearly as possible similar to that of healthy persons, Unna recommends ichthyl ointments as the most efficient remedy.

As for the affections of the mucous mem-

brane, the conjunctival catarrh disappeared by spontaneous action, doubtless in consequence of the general treatment. The ulcer in the nose, the induration on the tonsils as well as the little nodule on the epiglottis were removed or cured by cautery in 6 sittings. Treatment of the ulcers with nitrate of silver, boracic acid, did not succeed, nor emollient of the indurations on the tonsils. During the whole treatment, ichthyl was administered internally, doses being in the beginning 0.4 grams in pills, then after a fortnight, 1.0 pro die, by gradual increase. After that, I proceeded with larger doses of 2.0 grams, and soon of 3.0 grams pro die in capsules. I have never seen any unfavorable consequence of the internal use of ichthyl. As to the question whether ichthyl has really an appreciable action on the disease, when applied internally, I would not answer in a direct way. The fact is that the small doses of 0.4 pro die, applied in the beginning, were accompanied by as rapid an improvement in the condition of the patient, as later 3 grams pro die. I will not omit to state in this connection that Unna at present considers invigoration of the patient, especially removal of muscular debility and want of appetite, as the real value of internal administration of ichthyl.—*Pacific Record of Medicine and Surgery*, February, 1889.

An Anomalous Form of Eczema.—DR. E. D. MAPOTHER writes (*British Medical Journal*, January 5, 1889):

Last January I was consulted about a raw surface involving the right tragus, and the hairless skin in front of it, and at once its likeness to Paget's disease of the mammary areola struck me. It was oval, about $1\frac{1}{2}$ inch vertically and an inch transversely, florid and moist as is the glans penis during balanitis. The patient was a married woman of 40, long troubled with uterine maladies. Referring to my notes, I found records of two very similar cases, unilateral and in

females, but of diverse ages—45 and 12. In the latter there was also a small patch a little above the eyebrow. The uniform, florid, oozing surface without granulations, hard and slightly raised, but without the rolled over edge of rodent ulcer, without pain or much itching, stubbornness to treatment, without occasional disappearance, characterized all the cases. Dr. Crocker has observed a like condition on the scrotum.

Some physiological analogies group these regions: in all the sebaceous glands are very large; those round the nipple were, by Bidloo in 1685, described as supplementary mammary glands. The soaking of the skin by the overflow of milk or by the saliva of the infant may be prevented by their oily secretion, and in the scrotum and parotid region a similar waterproofing protection may be afforded against the urine and the sweat falling from the temple respectively. All agree as regions in which the arrival of puberty is manifested. In the female the scanty hair in front of the ear remains of the lanugo kind, and the glands are correspondingly large. The raw surfaces occasionally noticed round the lips, the nostrils, the eyelids, and round the anus are somewhat like, but they are rarely so chronic as Paget's disease, or the condition I note in the parotid region. All the cases healed, a slightly depressed unpigmented cicatrix remaining. Some forms of eczema undoubtedly leave scars, reaching well into the papillary layer. In 1879 Professor McCall Anderson saw with me a girl aged 4, who had somewhat similar raw eczematous patches on one cheek, and on the flexures of both knees and one elbow and ankle. The oozing was excessive, and did not cease for six years after, when rickets of the spine appeared, due probably to the saline flux. Pale, somewhat concave scars endure.

It may be mentioned that Paget's disease of the mammary areola appears to be

rare out of England; so say Scotch and American observers; and except a case which I observed in St. Vincent's Hospital, I can find no record of an instance in Dublin. My patient was an Englishwoman. It may be that there is a peculiar microbe which has not been freely imported, nor has found a fit soil. The curative effect of that greatest of parasiticides, mercury, in the cases here noted, supports that probability, as also does the apparent usefulness of exclusion of air. All forms of eczema on the face are obstinate, because of the unavoidable access of light and air. The earlier cases I treated by an ointment containing carbolic acid, mercurial ointment, and vaseline; in the latest, that most valuable natural agent, lanolin, was employed as the vehicle; but in all, the surface being so limited, exclusion of air was attained by Seabury and Johnson's rubber plaster carefully adjusted.

Prevention of Summer Diarrhœa in Children.—DR. L. EMMETT HOLT says (*Medical News*, Feb. 23, 1889):

The treatment of follicular ulceration of the intestine is extremely unsatisfactory. I believe that the great majority of these cases are fatal. Certainly, I have never seen at autopsy in a child anything which resembled a cicatrized follicular ulcer.

Successful treatment must be in the nature of prevention.

Prevention must have regard to all the milder intestinal catarrhs.

Regarding neglected diarrhoeas during dentition, so much has been said recently that it is scarcely necessary to enter here again a protest. There is to my mind no more reason why an intestinal catarrh should not be treated, and, if possible, cured during dentition than at any other time. The fact that a child with whooping-cough is extremely liable to bronchitis and pneumonia has never been given as a reason why these complications should not be

treated promptly and energetically when they arise.

Is an intestinal catarrh ever salutary? This is questionable. A number of loose movements may be of advantage to expel undigested food or other irritating materials from the intestine, but that a persistent intestinal catarrh, even if not severe, is an advantage to any child at any period remains to be proven.

The medical profession should take strong ground against the prevalent popular opinion, that so long as the general health is not affected, an intestinal catarrh is not only of no importance, but may, during bronchitis or dentition, even be beneficial, and that to cure it might be injurious.

It is in such cases as these that though amenable to proper treatment in the earlier stages, when allowed to run on, as they often are for weeks or even months, the foundation for grave and even fatal forms of diarrheal disease is often laid.

The prophylactic treatment involves then the early recognition and intelligent treatment of all the forms of dyspeptic catarrh; in other words, it means that we must secure proper digestion, and this depends chiefly upon proper feeding.

Our attention has been repeatedly called of late to the importance of seeing that our milk and other infant foods are pure and free from germs and putrefactive products. This is all important. Another danger which has not been often enough emphasized is overfeeding.

During the past two years I have been trying to get at some exact data regarding the proper amount of food which an infant, who is artificially fed, should receive at the different periods. This has been studied, first, by measuring carefully at autopsies the capacity of the stomach; and, secondly, by weighing healthy infants who were nursed at proper intervals, before and after they were put to the breast.

While I have not yet accumulated sufficient statistics for publication, still enough

has been learned so far to show that the figures given in most of our books are altogether too large, and that the vast majority of hand-fed infants are *very greatly overfed*.

Difficulty and failure may result from this fact where every other condition for success has been attended to.

In conclusion I would emphasize the following points:

1. Children should not be overfed at any time, but especially not in summer.
2. At this season, also, every dyspeptic catarrh should be attended to; many of these are promptly curable by merely clearing out the intestine and then cutting down the quantity of food.
3. Should an intestinal catarrh, even a very mild one, continue for two or three weeks, one may be pretty certain that he has something more than a functional disorder to deal with.
4. Every mild catarrh should be looked upon as the possible precursor of a severe type of intestinal disease, either near or remote.
5. In the treatment of all diarrhoeal diseases it should be borne in mind that there is something more to be considered than the bacteria and the products of decomposition, viz., the anatomical changes.

Alum in Bread.—PROFESSOR J. W. MALLET, of the University of Virginia, has been pursuing an interesting course of investigations into the effects produced by the use of alum in bread, and has found that, as has long been assumed, it is injurious. In the United States the greater part of the baking powders sold, it has been found, are made with alum, the acid phosphate of calcium, bicarbonate of soda and starch. The result of Professor Mallet's inquiry, as given in the *Pharmaceutical Journal*, has been to show that these powders give off very varying proportions of carbonic acid gas, and therefore different proportions have to be used for the same

quantity of flour to produce the requisite porosity in bread. When moistened with water they yield small quantities of alumina and calcium salts in a soluble form. Most of them leave, after use, the greater part of their alumina in the form of phosphate; but when acid phosphate of calcium is not used alumina is left. As the baking temperature in the interior of bread does not exceed 212° F., neither the water of combination of alumina or of its phosphate is removed from the residues of baking powder so used. However, in doses not very greatly exceeding such quantities as may be derived from bread as commonly used, Professor Mallet has found that hydrate and phosphate of alumina produced an inhibitory effect upon gastric digestion. He considers that this effect is probably a consequence of the union of alumina with the acid of the gastric juice, and at the same time of the precipitation of the organic peptic ferment in an insoluble condition like a kind of lake. A similar action may also be exerted by hydrate of alumina upon some of the organic matters of food. From the general nature of the results obtained, it is inferred that not only alum itself is injurious, but that likewise the residues resulting from its use in bread-making must be ranked as objectionable, and that the practice of adding alum should be studiously avoided when the object aimed at is to make wholesome bread.—*The British Medical Journal.*

Tape-Worm in an Infant on Raw Meat Diet.—DR. J. A. SHAW-MACKENZIE relates (*British Medical Journal*, Jan. 5, 1889) the following case:

A. B., aged 1 year and 7 months, was the third child of healthy parents; it was weaned at 9 months, and fed on milk and broth, etc. It was a well-developed child, but always suffered from constipation. In May last, at 12 months old, after a severe attack of bronchitis and laryngitis, raw meat diet was begun, an

ounce to an ounce and a half of finely scraped and pounded beef being given on alternate days. The child improved greatly, but in October began to fall off in looks; and on the 21st joints of tape-worm were noticed in the motions. Two fifteen-drop doses of liquid extract of male fern brought away several feet of the worm, but though small proglottides were noticed, no head was found, and though a repeated dosing was gone through a fortnight later nothing has been noticed since.

Remarks.—The possibility of tape-worm (*tænia mediocanellata*) following a raw or underdone beef dietary is well-known, but I do not think it is generally realized that the “raw meat diet” of infants carries with it the above disadvantageous chance. During three years as house-surgeon and registrar at the Victoria Hospital for Children and in private I have never met with a case, and it would be interesting to know (with the now more general raw meat dietary) whether tape-worm in children is more common. The early addition of meat to a child’s dietary is opposed to popular ideas, but the advantage, especially to the weakly and delicate, is so obvious by their rapid improvement and development that it seems disappointing to find that there is an “element of truth in the popular prejudice” of mothers against it. I am sure that children brought up on meat diet are very different in health, spirits, and physique from children brought up on a farinaceous diet, but in future I would recommend that all pounded meat should be first scalded with a little boiling water or beef tea, and I shall be inclined to push raw chicken diet, which from experience I have found children take readily and improve upon, with no apparent disadvantage.

Nature and Treatment of Diabetic Coma.—DR. STADELMANN, of Dorpat, in a recent article in the *St. Petersburgische Wochenschrift*, points out the great similarity

which seems to exist between the coma of diabetes and the condition produced in herbivorous animals by inducing acid intoxication. Amongst other points, he refers to some analyses by Minkowski, of the gaseous contents of the blood. In the normal condition, the blood of the rabbit contains 25 per cent. of carbonic acid; but when the animal is suffering from artificially induced acid intoxication, the carbonic acid is diminished. Thus in one instance Minkowski found it 16·4 per cent. with a moderate degree of intoxication; when the latter was increased, the percentage of carbonic acid fell further, first to 8·8 and finally to 2·9 per cent. In order to compare this with the gaseous changes in the blood of diabetics, he examined the blood of a patient before and during coma, the carbonic acid being respectively 17·0 and 3·34 per cent. In order to ascertain whether this diminution of the carbonic acid in the blood was merely due to coma as such without reference to its cause, he examined the blood of a comatose patient, not a diabetic, whose condition was due to meningitis. Here the carbonic acid amounted to 28·2 per cent. The acid existing in diabetes appears to be oxybutyric acid, which in some cases appears in the urine to the extent of something like three ounces per diem. Some years ago Dr. Stadelmann found a new acid, which he believed to be crotonic acid, in considerable quantity in certain cases. He now, however, considers it merely a substitution product from oxybutyric acid. The indications for treatment supplied by these views are of course to combat the acid by large quantities of alkali. Several attempts have been made to treat diabetic coma by injecting into the veins from one to four ounces of carbonate of soda dissolved in about four pints of water, with a little chloride of sodium. In only one instance, however, has this proved successful, and unless it is done very early no good result can be fairly expected of it. It is found

that the urine in twelve hours after the injection is intensely acid. Better results are to be obtained in attempting to ward off coma by giving alkalies freely. Thus Dr. Stadelmann prescribes about an ounce of tartrate or citrate of soda dissolved in about half a pint of soda water two or three times a day, and has found great reason to be satisfied with this line of treatment. Of course, if coma should come on, he would have recourse to alkaline intravenous injections without loss of time.—*The Lancet*, Feb. 9, 1889.

Opiates in Diabetes Mellitus.—In a paper on the relative value of opium, morphia and codeia in diabetes mellitus, read before the Section of Pharmacology and Therapeutics of the British Medical Association, DR. THOMAS R. FRASER said that he had arrived at the following conclusions:

1. The case was one in which mere restriction of diet did not have so marked an effect as occurs in many cases. The prospects of successful treatment were not, therefore, very hopeful.
2. Codeine had a very decided effect in reducing the quantity of urine, sugar and urea. When contrasted with the reduction produced by restricted dietary alone, the addition of nine grains of codeine in the day lessened by about one-third, and of fifteen grains of codeine in the day by about one-half, the quantity of fluids drunk, and the quantity of urine, sugar and urea, and it slightly reduced the specific gravity of the urine.
3. The addition to fifteen grains of codeine of the one-twentieth, and afterwards of the one-tenth of a grain of sulphate of atropine, caused a still further, though not a large, reduction.
4. After the administration of codeine had been stopped, an interval of six days on restricted diet, without any medicinal treatment, was not sufficient for a deterioration to occur to the conditions present before codeine had been given.

5. The subsequent administration of half a grain of opium thrice daily produced a considerable reduction. With one grain of opium thrice daily the reduction was to less than one-half, when contrasted with the amounts during a restricted diet alone, and before any medicinal treatment had been adopted. One grain and a half thrice daily produced a further reduction; and when to it was added one-twentieth of a grain daily of sulphate of atropine, a still further reduction occurred.

6. Restricted diet, with one third of a grain of hydrochlorate of morphine thrice daily, or one grain daily, also produced a marked reduction; and the conditions relative to the points under investigation were even more satisfactory than when fifteen grains daily of codeine were being administered. While this small quantity of morphine was being taken, the fluids drunk by the patient were only one-third, the urine and sugar less than one-half, and the urea about one-half of the amounts during the period of restricted diet alone, before medicinal treatment had been commenced.—*Northwestern Lancet.*

The Bacteriology of Puerperal Fever.—

CZERNIEWSKI (*Arch. f. Gyn.*, B. xxxiii., H. I.) in an elaborate paper discusses some of the unsettled questions of puerperal bacteriology. Many authors are of the opinion that the streptococcus is the specific microbe of puerperal fever, at least that which pertains to the severer forms of fever (Pasteur, Lomer, Gönner). Of the cause of the lighter forms there is as yet no settled opinion. Fritsch makes two forms of fever—septic or severe and non-septic or light, believing that the septic fever may be produced by non-pathogenic organisms. Olshausen separates the non-malignant (peri- or parametric) from the septic variety without attempting to explain the difference in the pathogeny. Charpentier recognizes a traumatic and a septic fever. Schroder says putrefaction of lochia may

occur from access of atmospheric germs. Zweifel does not commit himself on the question whether the lighter varieties of puerperal fever are of septic origin or not. The severer form he ascribes to the chain cocci. He apparently thinks the chain cocci may in certain cases cause only the milder grades of fever. The larger proportion of the lighter forms are produced by the absorption of putrefactive products (ptomaines, sepsin).

Charles appears to be of the same opinion as Charpentier. So far as the writer knows Credé is the only authority who takes a decided stand on the theory that all grades of childbed fever are due to infection with one and the same poison. The different results of infection he attributes to differences in the resisting power of the organism, the sites of invasion and channels of diffusion. If the peccant germs expend their force upon the tissues, the lighter forms of fever result; if they gain access to the blood or lymph-vessels, the graver forms are produced.

Rosenback, Passet, Norden, Mejerowitz, Biondi, and others declare the identity of the pyogenic streptococcus and that of erysipelas. Pawlowsky, Hoffa, Winckel believe them to be different organisms.

Dr. C. has studied the subject by the aid of an elaborate series of bacteriological investigations conducted in the lying-in hospital at St. Petersburg. He examined the lochia of sick and healthy puerperæ and the fluids from the cavities of bodies dead of puerperal fever, and made cultures therefrom. His conclusions are as follows:

1. Micro-organisms are very seldom found in the uterine cavity or the lochia of healthy puerperæ.

2. The lochia of healthy lying-in women possesses neither phlogogenic nor pyogenic properties.

3. In most cases of light puerperal fever the streptococcus may be found in the uterine cavity and the lochia.

4. In fatal cases of childbed fever (septicæmia, lymphatic form), the streptococcus is found in the lochia, and after death in all the organs and fluids of the body.

5. The streptococci of the light and of the fatal forms of fevers are one and the same organism.

6. The streptococcus of puerperal fever by inoculation in animals is capable of producing abscess or erysipelas.

7. In sick puerperæ the streptococcus gives rise to a degeneration of the parenchymatous organs, hyperæmia of the serosa, and to more or less exudation.—*Brooklyn Medical Journal*, March, 1889.

Hydroxylamin in Skin Diseases.—DR.

EICHOFF, of the Municipal Hospital, Elberfeld, has found an admirable substitute for pyrogallic acid, chrysarobin, and other powerful reducing agents used in external applications for skin diseases in hydroxylamin, which is, chemically speaking, an ammonia in which one of the atoms of H is replaced by HO. The most suitable compound for dermatological use is the chloride, the formula of which is NH₂OH·Cl. This occurs in colorless, strongly hygroscopic crystals, which are readily soluble in water, glycerine or spirit, the solution showing an acid reaction. When introduced into the blood, hydroxylamin forms methæmoglobin, the blood rapidly becoming of a deep brown color. In large doses—that is to say, 0·01 grammes per kilogramme of body weight—it produces haematuria in consequence of the destruction of the red corpuscles. It also acts on the nervous centers, producing narcosis. The high reducing power possessed by hydroxylamin renders it a powerful poison to low organic forms, and on this account it is to be very strongly recommended in dermatology. The preparation used by Dr. Eichoff is the hydrochlorate dissolved in a mixture of equal parts of glycerine and spirits of wine in the proportion of 1 per 1000. This is applied with a brush to

the affected parts of the skin, which must first be carefully washed with soap three to five times a day. In this way he has treated five cases of lupus, five of ringworm, and one of parasitic sycosis, with excellent results. These were specially remarkable in two cases of very severe lupus. Dr. Eichoff is hopeful that this remedy, which may sometimes perhaps be applied in the form of subcutaneous injections, may be found useful in psoriasis, parasitic eczema, and even in lepra and syphilis. He, however, warns those who propose to try it that it is a very powerful irritant, and that even for outward application a strength of 1 per 1000 is quite enough.—*The Lancet*, Feb. 9, 1889.

Surgical Shock.—Upon this most important topic MR. CHRISTOPHER HEATH says: While many surgeons, myself among the number, rarely employ the carbolic spray nowadays, yet even without this there is, I believe, considerably increased risk to patients in the exaggerated slowness of modern surgery. For a patient to breathe the vapor of ether or chloroform for over an hour is a serious matter for both heart and lungs; and when we add to that a steady drain of blood going on for an equal time, one cannot be surprised at the production of deadly shock. And is there any gain after all in elaborate dissections of the living as though it were a dead body? I believe not; and, having had a fair amount of experience in removing tumors of all sizes from all parts of the body, I would urge surgeons to use the left hand a little more and the right a little less than now seems to be the fashion. I mean, to make forcible traction with the one hand whilst avoiding the tense structures with the other, so as to avoid dissecting-room proceedings with scalpel and forceps as much as might be. I hope I shall not be misunderstood as decrying careful dissection in appropriate cases—for example, the ligation of large arteries; for I fear, from

what I see in examining candidates for the higher surgical degrees, that a blunt director must be used by some teachers in what I consider to be a very dangerous manner. The following guards against shock are strongly recommended: a rectal injection of brandy and hot water prior to and a subcutaneous injection of morphine and atropine after an operation.—*British Medical Journal.*

Phenacetine.—Apparently one of the best of the modern antipyretics is a substance described by Hinsberg and Kast as para-acetphenetidin, a substance analogous as regards its chemical constitution to antifebrin. We have already a number of times alluded to the properties of this substance (*Therapeutic Gazette*, 1888, pages 43, 142, 699), and although the testimony as to the action of this preparation as an antipyretic and antineuræalgic appears to be unanimous as to its value and freedom from danger, it has attracted no attention among English-speaking members of the profession. This preparation, phenacetine, as first prepared, was a reddish, odorless powder, insoluble in water and in glycerine, and thoroughly soluble in hot alcohol and alkaline liquids. It has been recently prepared in colorless, crystalline needles, which are claimed to be soluble in acetic and lactic acids and in hot oils. Extended experiments on dogs and rabbits have shown that it is almost inert in doses of from 15 to 30 grains given daily for days at a time. When the dose is increased up to 45 and 75 grains in large dogs it produces accelerated respiration, sleepiness, disturbed co-ordination, and vomiting, and, in still larger doses, methæmoglobin is produced, as in antifebrin-poisoning. Even after this symptom has appeared, however, recovery has almost invariably occurred. Dr. Hoppe (*Deutsche Medizinal Zeitung*, 1888, No. 92) has made a number of experiments on man, administering doses of from 15 to 40 grains, and has found that after a time the

system becomes accustomed to the remedy. The only disagreeable effects produced by these amounts were sleepiness, dizziness, nausea, and slight chilliness, the temperature, as consequent on doses of 30 grains, being only reduced a few tenths of a degree Centigrade. It appears, therefore, to be almost free from toxic properties, while his experiments made in the Jewish Hospital in Berlin have confirmed the result of the experiments as already published by other observers. It has proved absolutely harmless, the only disagreeable after-effect being profuse perspiration, ringing in the ears, followed by weakness, and only in individuals already depressed by disease. As an antipyretic in children, doses of about 2 grains reduce the temperature from 1° to 2° C., a single large dose producing more effect than repeated small doses.

Led by the analogy of phenacetine in composition to antipyrin and antifebrin, Dr. Hoppe has likewise tested the properties of this drug in twenty-five different forms of neuralgia, in the majority of which relief of pain followed its employment. Various cases of headache were also relieved by its use within half an hour to an hour; and he believes that in neuralgia, as in febrile disease, it is equally as efficacious as antipyrin, and is preferable to it on account of its freedom from danger.

Dr. Rumpf (*Berl. Klin. Wochenschr.*, No. 23, 1888) likewise experimented to a considerable extent with phenacetine as an antipyretic and in the treatment of neuralgia. Dr. Rumpf believes that as an antipyretic it is as active as any yet introduced, since he has found that a single dose of 15 grains given to adults may reduce the temperature in the febrile state from two to three degrees in two hours; even half the dose has produced the same effect with no disagreeable complications. In eight cases of hemicrania doses of 15 grains produced great relief, while in seven cases of neural-

gia of different nerves it has likewise been very satisfactory. Dr. Rumpf describes phenacetine as a drug which, in doses of 15 grains to adults or 3 grains to children, is an absolutely safe, reliable, and satisfactory antipyretic; while in doses of 15 grains it is highly recommended as an anti-neuralgic remedy in all cases of vaso-motor neuroses, in the lancinating pains of tabes and the neuralgias of chronic neuritis.

Drs. Misrachi and Rifat (*Bulletin Gén. de Thérapeutique*, June 22, 1888) have confirmed in all respects the statements which we have already published as to the action of this remedy. It is these authors who have determined the solubility of phenacetine in lactic acid. They have found that this solution is not disturbed by the addition of water as long as the temperature does not fall below 33° C. It is evident that this discovery is a great addition to the practical value of this remedy, since its high insolubility has been the principal objection to its use in therapeutics. After the administration of the lactic-acid solution it is rapidly absorbed, and has been capable of detection in the urine.—*Therapeutic Gazette*, March 15, 1889.

Germicides in Typhoid Fever.—Although in typhoid fever there is a better opportunity for using germicides in sufficient concentration to render them effectual, practitioners appear to be slow in adopting this idea in its treatment. This is doubtless in great part due to the very fair results obtained by the treatment already in vogue. The antiseptic methods practiced in the great German hospitals, and the expectant plan pursued in this country, have yielded a percentage of recoveries which is certainly remarkable when we consider the serious nature of the disease, and the dangerous complications and sequelæ which beset it. But no result is good enough if there be room for a better.

Another reason for the slowness of the

profession to take up the intestinal germicides has undoubtedly been the thought that, while the intestinal canal has served for the introduction of the disease-germs into the body, the symptoms are produced by the penetration of these germs into the blood-vessels, and their passage to all parts of the body. To what extent and at what stage of the disease this takes place, we are not as yet informed. Indeed, we are in want of a series of examinations of the tissues and fluids of the body, during the progress of typhoid fever, with a view of determining this interesting point. Judging from the effect of germicidal treatment, we are warranted by clinical observations in believing that the intestinal canal is at first the sole theater of the microbial operations, and that the general symptoms are produced by the absorption into the circulation of poisons generated in the intestines by the specific microbes of the disease; further, that there is a time when a microbial invasion of the blood really occurs; after which the exhibition of intestinal germicides fails to be followed by the marked benefit which accrues from their use previous to that time.

It may be noted that even before the promulgation of Klebs' discovery, the remedies which had obtained the esteem of clinicians in the treatment of this disease are those which possess some local germicidal properties. How else can we explain the claim of Wunderlich, that typhoid can sometimes be aborted by a few doses of calomel? Or that cases treated throughout with iodine give a better percentage of recoveries than those treated without it, all other conditions being the same? It is possible that nitrate of silver, the mineral acids, quinine and turpentine owe their reputation in great part to their local germicidal effects.

During the past year there have been several important publications upon this subject; especially noteworthy as showing that several observers, working with dif-

ferent agents, have obtained very favorable results.

Gramshaw¹ reported a series of 116 cases, treated with carbolic acid and iodine, without a single death.

Bouchard² makes use of naphthol and salicylate of bismuth, and claims results more favorable than were obtained from empiric medications, and the treatment of symptoms. As he associates with this treatment the use of baths, quinine, calomel, etc., it is not possible to judge definitively of the exact value of intestinal antisepsis in his very numerous successful cases.

To these observations is now added an interesting paper in *The Practitioner* by J. Mitchell Clarke, on beta-naphthol in enteric fever. He calls attention to the ease with which toxic bodies, found in the intestines, normally, or through the intervention of the disease, gain access to the organism through the intestinal ulcers. Bouchard showed that beta-naphthol is only toxic in doses of about eight ounces per day for an adult of average weight, while forty grains in the 24 hours suffice to keep the bowels aseptic. This is given in milk, or in gelatine capsules. Small doses frequently repeated are preferable.³

Acetanilide or phenacetine were also used when the fever exceeded 102° F.

In the five cases treated by naphthol throughout, the abdominal symptoms were favorably modified, but the fever showed its usual course, the highest range being 103.5° to 104.8°. In two cases the naphthol had to be stopped on account of gastric disturbance, excited by the drug. In one case a relapse occurred after deferves-

cence from a mild first attack. Convalescence was unusually rapid in this series of cases, and the patients were less reduced in strength than usual.

His conclusions are:

1. That the production of an intestinal antisepsis is a rational mode of treating enteric fever, and that beta-naphthol is a safe and tolerably efficient agent for this end.

2. That by its use in the above cases the duration of the disease was shortened, and the intensity of the symptoms directly arising from profound disturbance in the alimentary canal was lessened.

3. That the tendency to the occurrence of splenic enlargement, albuminuria and secondary complications, such as boils, abscesses, etc., of purulent infective origin, is diminished.

4. That complete convalescence is more speedily and satisfactorily attained, and that there is less risk of a propagation of the disease to others.

In June last the writer presented a series of twelve cases treated with the sulpho-carbolate of zinc. Eleven of these were thus treated from the beginning, and all recovered. The other case was almost moribund when it came into the writer's hands, from repeated intestinal hemorrhages, and cannot be counted against the treatment, except as showing that there is a time when intestinal antisepsis ceases to be curative. Since that time twenty-two cases have been treated by the same agent, all of which recovered.

The sulpho-carbolate of sodium was substituted for the zinc salt in some instances, the results being apparently identical.

Neither Clarke's list of seven cases, nor our own of thirty-three, is sufficiently extensive to warrant positive deductions; but it may be of some interest to point out the differences in the action of the two agents used:

1. Intestinal antisepsis is procured by

¹ Philadelphia Medical Times, Aug. 1, 1888.

² La France Médicale, Jan. 3, 1889; page 3.

³ The following is Clarke's formula:

R Beta-naphthol.....	gr. xx
Tinct. aurantii.....	f. ʒ ij
Syr. limonis.....	f. ʒ ss
Mucil. tragacanthæ.....	f. ʒ iij
Aqua, q. s. ad.....	f. ʒ vj
M. S. Dose, f. ʒ j.	

both, requiring 40 grains *per diem* of naphthol and 30 grains of the sulpho-carbolate (in adults).

2. Gastric disturbance resulted in two cases out of seven from the naphthol; in none from the zinc.

3. No decrease in the fever was obtained from the naphthol, while in every case the sulpho-carbolate caused a fall of at least one degree.

4. Dr. Clarke does not state that the cerebral symptoms were either moderated or prevented by naphthol; while this formed a marked feature in all our cases but one.

5. The tendency of secondary suppurations, probably resulting from the entrance of pyogenic bacteria through the intestinal ulcers, was diminished in both series.

6. We think that the effect on the intestinal symptoms was more marked in our own cases, though it may be simply that Dr. Clarke has not dwelt on this point.

Altogether, the advantage in every particular appears to be on the side of the sulpho-carbolates.—*Medical Times*, February 1, 1889.

Subcutaneous Silk Ligature in Fracture of the Patella.—At the meeting of the New York Surgical Society on January 9, DR. LEWIS A. STINSON showed two patients with recent fracture of the patella treated by subcutaneous silk ligature. During the preceding two months he had thus treated five patients with recent fracture, the two now presented being the first and third of the series. The second had been discharged cured; the fourth and fifth were still under treatment and doing well.

The method employed might be called a modification of the external silk ligature employed some years ago by Volkmann, and had been suggested and employed in the first two cases, under the speaker's supervision, by DR. E. W. Clarke, house surgeon at the New York Hospital. It

consisted in passing a silk ligature through punctures made in the skin, through the tendon of the quadriceps femoris and the ligamentum patellæ and under the skin in front of the patella, in such a manner that by drawing the ligature tight the two fragments of bone were drawn together. He employed a long half-curved Hagedorn's needle and a stout braided silk ligature. The four punctures (through the skin and the sides of the tendons) were made close above and below the patella—at its four corners, so to speak. The needle was entered at the lower right-hand corner, carried through the ligamentum patellæ to the bone, then across and out through the opposite puncture. This made a loop through the lower tendon. Then the needle was entered beneath the skin at its recent point of exit and carried upward between the skin and the front of the patella and brought out at the upper puncture on the same side. It then reentered at this upper left-hand puncture through the tendon of the quadriceps, crossed beneath it, emerged at the opposite puncture, and thus made a loop through the upper tendon. The needle was then passed in at this fourth puncture (through the skin) and carried down under the skin and in front of the patella to emerge at the first puncture (where it had entered). The two fragments of the patella were then pressed into close apposition, the silk cord was drawn tight and tied, and its ends were cut short. The entire suture being thus subcutaneous, the punctures through the skin were closed with a single suture passed through each. It was not necessary that the ligature should include the entire width of the tendon, but it was sufficient if it embraced just enough to give it a firm hold. It should also be passed close to the attachment of the tendon to the bone, in order that it might not become slack by cutting through the tendon toward the bone, under the strain. The silk-worm gut was apt to break at sharp turns. Catgut became ab-

sorbed too soon unless treated with chromic acid. The union obtained was not bony, but a close fibrous union; however, this had been shown to be true of the union of the patella in most instances where examination had been made after death, even when the fragments had been wired together. He had in a single instance produced bony union after uniting the fragments with cat-gut. He applied only a simple posterior splint. The stiffness of the knee which patients at first experienced he was convinced was due to contraction of the internal and lateral ligaments of the joint and soon disappeared when the use of the limb was resumed.

In one case ten days had elapsed after the accident before the operation was done; in the others only a few hours. In the first case the needle had broken and a transverse incision had been made to remove the broken end. Silk-worm gut had been used in this case for a ligature, and its manipulation had been faulty. Twelve days later the fragments had been found to be an inch apart, probably owing to kinks forming in the ligature when first introduced. The operation had been repeated, this time silk being used. Suppuration had followed, but the process had remained extra-articular. After a month the silk suture had been removed through the sinus, and the silk-worm gut suture two weeks later. Since then the openings had closed rapidly. The patient could flex the knee nearly to a right angle and no separation could be felt.

In the second patient the fracture had been close to the upper border of the patella, and the patient had been discharged well in about six weeks. In the third patient (presented) the fracture had occurred five weeks before; he was now able to flex the knee to a right angle, and no separation of the fragments could be recognized. The fourth patient had been under treatment three weeks; there had been no inflammatory reaction, and the fragments were not

separated. In the fifth case only two days had elapsed since the operation.

The speaker thought the method was to be recommended, not only because of its own merits, but also because it was an efficient and apparently much less dangerous substitute for open arthrotomy and metallic suture—a method which, although almost entirely abandoned in Europe, was still having numerous victims in America. He knew of three cases, of which no report had been made, that had occurred during the past summer in the hospitals of New York where, after that operation, the joint had suppurated, amputation had become necessary, and eventually the patients had died.

DR. J. D. BRYANT asked whether the method would be available where there was marked separation of the fragments with difficulty in making coaptation, or when there was an interposition of fibrous tissue, or when a firm blood-clot filled the gap.

DR. G. A. PETERS suggested, in answer to Dr. Bryant's first question, that four, six, or even eight separate loops could be passed and drawn together.—*The New York Medical Journal*, March 9, 1889.

Lead-Poisoning from Service Pipes, in Relation to Sterility and Abortion.—DR. ALFRED SWANN says (*British Medical Journal*, Feb. 16, 1889):

The following cases are of interest, inasmuch as they suggest, if nothing more, a possible danger arising from the supply of water through leaden piping for domestic purposes.

CASE I.—MRS. T., aged about 32 years, was confined in 1882. Since then she has had progressive ill-health, with constipation, digestive disturbances, frequent colic, rheumatic pains, and irregular menstruation, with now and then severe menstrual haemorrhage. After cessation of menses for eight weeks an abortion occurred on March 17th, 1884. After cessation of

menses for seven weeks, another abortion took place on September 10th, 1884.

Colic continued to be frequent, and severe constipation remained obstinate, and recurrent attacks of metrorrhagia became alarming. I had for a long time been of opinion that the water-supply, which came through lead piping of some length, was the cause of all the foregoing symptoms, and in the early part of 1887, my patient having been confined to bed for some months, iron piping was substituted. After this there was only one attack of colic, and no severe hemorrhage; the bowels became regular, and menstruation became normal for a time. Pregnancy ensued, and my patient was confined of a healthy child on March 2nd, 1888. Since then she has remained in good health.

CASE II.—Mrs. C., aged about 30 years, has had one child some seven years ago, in 1882. She came under my care in 1885, suffering from constipation, indigestion and colic. She has irregular and frequently profuse menstruation. She aborted after suspecting pregnancy for eight weeks, on January 6th, 1886. She has a blue line on the gums. I ascribed her abortion and previous illness to lead piping, and these were removed and iron pipes substituted. Colic became less severe and disappeared; the bowels became regular; menstruation became normal; then pregnancy ensued. On October 22nd, 1887, she was confined of a healthy child, and has since remained in good health. In the same house the servant suffered from rheumatic pains, colic, and constipation, until the removal of the lead piping, after which she regained her wonted health.

CASE III.—Mrs. F., aged about 30 years, has two children. The last was born on September 7th, 1884. After this her health became seriously impaired; she had severe digestive disturbances, rheumatic pains in the limbs and loins, constipation, colic, and very irregular menstruation. Her life became a burden to her, no treatment being

of any avail. I told her husband that I believed all her symptoms were due to the water-supply, but he ridiculed the idea. I referred him to Cases I and II. Even after receiving their evidence, his skepticism remained, but he removed the lead piping, and substituted iron. The result was as remarkable as in Cases I and II; all the symptoms disappeared and menstruation became regular. Then pregnancy ensued, and on May 11th 1887, my patient was delivered of a healthy child, and has since remained in good health.

I do not record these cases in a dogmatic spirit, nor do I aspire to scientific accuracy in my deductions from them, but there can be little doubt that in Cases I and II the cause of abortion and hemorrhage was water contamination by lead, and in Case III one may reasonably suspect lead as being the cause of all the symptoms.

It has fallen to my lot to observe many cases of plumbism, and its relation to sterility and abortion only touches the very fringe of a vast subject. The influence of lead on the nervous, vascular, muscular, lymphatic, and digestive systems merits greater consideration than has hitherto been devoted to it.

To suppose that plumbism means only wrist-drop and paralysis of the extensors of the forearms seems to me to be illogical. I believe that in plumbism, neuritis is not confined to any particular set of nerves. Is not lead colic due to paralysis of the nerves regulating the muscular coats of the intestines? What is the meaning in cases of lead-poisoning of the tense pulse, the liability to epileptiform seizure, to cerebral and other hemorrhages, to gout and uric acid, and to albuminuria and rheumatic pains? Surely these point to both nervous, vascular, and metabolic derangements which open up a wide field of inquiry for those who are interested in our food and water supply, and in public health generally.

This paper is written only to suggest

grave possibilities to those who at present barely recognize a serious source of danger, and although I personally am satisfied of the far-reaching and lethal influences of lead in relation to many conditions not generally regarded as having any connection with it, yet I would prefer that those with more opportunities at their disposal than I possess would follow out a line of investigation which I have merely indicated. I am satisfied that they will find a fertile field for research.

Methyl Chloride for Local Anæsthesia.—

DR. B. WARD RICHARDSON says: When chloride of methyl is condensed, it produces, on being liberated through a jet, an intense cold. It has therefore been used commercially for refrigerating the carcasses of dead animals intended for consumption as food. This use of it has led to the suggestion of employing it for freezing parts of the living body in the same manner as ether spray is employed for local anæsthesia. The idea of such use occurred to me soon after I introduced ether spray, but was abandoned because of the difficulty of managing the gas for the purpose required. The difficulty lies in so regulating the escape of the gas, as to be sure of doing enough without doing too much.

In itself the chloride of methyl has no local anæsthetic properties, as some ignorant notices of it in the general press would lead the reader to believe. It acts simply and solely like ether spray, by the cold it induces, and the surgeon who would employ it should fully understand that he is simply substituting one cold producer for another. As a matter of practice, ether or rhigolene spray for benumbing with cold is in every sense the readier and more practical method, and the principle at work is the same.

For causing local anæsthesia by extreme cold compressed nitrous oxide, carbonic acid, or sulphurous acid act in a similar manner to compressed methyl chloride. I

once pursued a line of enquiry for local anæsthesia with nitrous oxide and with carbonic acid, the jet of each of which produced local anæsthesia. A jet of the nitrous gas playing upon the skin destroyed sensibility immediately by the cold it caused, and once acted with such intensity that a burn was the result. A workman, who was engaged in fitting up a nitrous oxide apparatus in my laboratory, brought his arm accidentally across a jet of the gas escaping at great pressure, and was so severely "chill-burned" that I had to treat him as for a burn from heat. This man told me that the accident was not uncommon amongst his class of workmen, and that they called the wounds that followed exposure "*chill burns*."

After seeing the action of these gases as above described, it occurred to me that they might be used as cauteries for the removal from the skin of warts and small pendulous growths. Their jet is much less alarming than either the heated wire or the knife. It is also very rapid in its action, and at the moment painless, although, as a matter of course, there is some pain and soreness afterwards.

Here is a new line of practice for surgeons, for removal of foreign growths by *the freezing cautery*, a practice which I do not for a moment doubt they will one day take up and follow out to important results. There are other gases beside those named which might be used. Compressed chlorine, delivered in a very fine jet, would be magically destructive. Combinations of true anæsthetics and freezing jets might also easily be obtained, under which large portions of the body could be painlessly removed.

In commencing this line of practice there can be no doubt as to the best gas to commence with. The best gas is carbonic acid. It is cheaply and readily made; it is easily condensed, admitting even of being condensed into the solid form, but on being set free as spray from the liquid state it

causes sufficient refrigeration. One great advantage of it is that, unlike methyl chloride, it is not inflammable, and can be used, therefore, with artificial light. It is also slightly anaesthetic.—*The Asclepiad*, Vol. VI, No. 21.

Chronic Headaches of Functional Origin.

—In an article on this subject DR. CHARLES L. DANA says in regard to treatment:

The treatment of headaches of young children, for example, brings us into an almost special line of cases. In the city of New York at least, these headaches are best treated as a rule by giving small doses of the iodide of iron or the citrate of iron and quinine. In school children headaches have often to be treated by removal from school, the use of tonics, change of diet, and the application of glasses suitable to any eye-defects that may be present. But glasses should be the last thing tried, unless the visual trouble is very marked. In some children arsenic acts well.

As to the therapeutics of headaches of adults: Headaches among brain-workers require, as a rule, a different class of remedies to those among muscle workers. In the former class nervines like antipyrin, caffeine, the bromides, act well, while attention to diet, exercise, and the eyes is especially required. Among the laboring classes, especially women, anæmia, malaria, syphilis, and rheumatic influences must often be attended to. There are sexual differences also to be borne in mind. In my experience, for example, antipyrin has been much oftener successful in men than in women. This may, however, be only a coincidence.

I shall conclude the subject of therapeutics with a few remarks on symptomatic remedies. Among the best of these is muriate of ammonium in large doses, 3ss to 3j, given in wafers. In the headache of neurasthenia, I have found that gr. v of menthol in hot water gives relief. In my

wards at Bellevue Hospital a combination of menthol gr. v to x, and antifebrin gr. v to x, is often used. Phenacetin is also a good remedy. A practical point of importance in the use of antipyrrin is the dosage. Often the best results are gotten by small doses frequently repeated. The much advertised effervescent preparations for headache contain too small a dose of caffeine or of bromide to be of the best service.

Of local applications a spray or lotion of aconitum; sheet lint soaked in twenty per cent. solution of menthol and wrapped on the head; solutions of cyanide of potash after the method of Troussseau; Rithet's tobacco and quinine snuff, are some of the measures indicated.

Every one meets now and then with cases of headache of obscure origin, obstinate in character and intractable to every kind of treatment. The use of iodide of potassium and of the strong galvanic current and static electricity has been of service to me in some such cases. The possibility of a diffuse neuritis as a cause of the pain in certain of these cases should be borne in mind.—*Medical Progress*, March 16, 1889.

Mental Depression and the Excretion of Uric Acid.—In the *Practitioner*, November, 1888, DR. HAIG contributes an interesting paper on the relation between the excretion of uric acid and mental depression. The author has published his researches on the relation of certain forms of headache to the excretion of uric acid (*Med. Chir. Trans.*, vol. lxx.), and he now shows that the mental condition of many patients depends on the amount of uric acid in the blood; when the acid is in excess it produces marked depression or irritability of temper, when this excess passes off there is a feeling of exaltation and sense of well-being. Many suffer from a certain amount of mental depression and heaviness at that time of the day at which the excretion of uric acid is normally at its

greatest, that is in the morning between breakfast and lunch, during the time the acidity of the urine is lowest. This corresponds in every way to the condition artificially produced by giving alkalies, which wash uric acid in excess into the blood, so inducing depression; by giving acids sufficient to counteract the alkalinity of the blood, the heaviness and depression will give place to feelings of well-being, mental clearness, and pleasure in living. When the blood is strongly alkaline, and in a condition to hold much uric acid in solution, all the symptoms of mental depression are present, and are more or less marked according to the amount of acid present, the excretion of uric acid in the urine being at the same time proportionally in excess of the average. When a dose of mineral acid has been taken the mental conditions clear up exactly in proportion as the uric acid is cleared out of the blood, and its excretion in the urine diminishes. When a dose of acid has been taken to cure a headache or a fit of mental depression it is extremely common for some amount of shooting pain in the joints to be present while the acid is driving the uric acid out of the blood. By reducing suddenly the alkalinity of the blood in this manner, it is very common for the uric acid in the tissues of the joints to be deposited in the joints instead of passing off in the blood. In the treatment of cases of mental depression, where it is evident that the excretion of uric acid plays the chief part, it is not always certain that a dose of acid taken now and then will produce a cure; the prevention of the excessive formation must be aimed at by regulating the diet. A large amount of butcher's meat should not be allowed, but should be replaced by fish, fowl, and milk, and stimulants are to be avoided. In many severe cases the author has met with great success by insisting on a diet of bread, butter, milk, potatoes, and a large quantity of fruit, continued for weeks or months. At the beginning of

this treatment the washing out of the uric acid stores may be hastened by giving about 15 grains of salicylate of sodium three or four times a day, or in some cases a dose of 20 grains every night is sufficient. This subject is worthy of continued study, and should commend itself to all medical men.

*The Value of Inhalations in the Treatment of Lung Disease.*¹—A limited number of experiments made by the author on phthisical patients tend to show that inhalations of iodine, whether vaporized by the steam or the hand-ball atomizer, have no deep penetration, inasmuch as the iodine cannot be detected in the urine after the inhalation. Turpentine, on the other hand, when inhaled, imparts its characteristic odor to the urine, thus showing that it is absorbed into the blood. This may explain its efficacy in checking haemoptysis.

The conclusions are as follows:

1. That the success of inhalations as a mode of medication depends principally on the easy convertibility into gas or vapor of such substances as are clearly desirable for the purpose.
2. That, consequently, bodies which are volatilized at ordinary temperatures are more readily absorbed by the lungs than bodies which have to undergo combustion before conversion into gases.
3. That all moist inhalations, where steam, watery vapor, or spray is the vehicle of medication, are but slowly absorbed by the lungs, and enter the circulation in small quantities, and in some cases not at all, the slow rate of pulmonary absorption contrasting strongly with the rate of gastric absorption of the same medicines when swallowed, as proved by their detection in the urine.
4. That medicinal inhalations are more useful in diseased conditions of the pharynx, larynx, and larger bronchi than in those of the alveoli and lung parenchyma.

¹C. Theodore Williams, Lancet, 1888, ii. p. 700.

5. That in pulmonary disease the anti-septic respirators, while they lessen cough, and reduce expectoration, exercise no lasting remedial influence on the diseased condition of the lungs, and often seriously interfere with the freedom of respiratory effort, which is so desirable in the treatment of such affections.—*Boston Medical and Surgical Journal.*

Treatment of Nasal Affections.—DR. COZOLINO, of Naples, recommends for the various affections of the nasal passages the following compounds:

For scrofulous rhinitis.

- R Sulpho-carbolate of zinc, grs. v.
- Salicylate of bismuth, grs. ix.
- Iodol, grs. vi.
- Tannate of zinc, grs. xxx.
- Powdered talc, grs. cl.

M. Use as a snuff.

Chronic catarrhal rhinitis.

- R Powdered alum,
- Borax, $\frac{1}{2}$ 30 grs.
- Menthol, 3 grs.
- Tannate of zinc,
- Tannate of bismuth, $\frac{1}{2}$ 45 grs.
- Lycopodium, 3 ij.

M.

or

- R Salieylate of zinc,
- Tannate of bismuth, $\frac{1}{2}$ 3 j.
- Powdered borax, 30 grs.
- Salol, 23 grs.
- Powdered talc, 3 ij.

M.

Simple acute catarrhal rhinitis.

- R Chloride of ammonium, grs. 45.
- Salieylate of sodium, grs. 30.
- Chloride of potassium, grs. 45.

M. To be used as a snuff.

Hyperæmic swelling of the nasal mucous membrane.

A frequent cause of reflex disturbances.

- R Glycerin,
- Water, $\frac{1}{2}$ 3 iv.

Alcohol (rectified), 3 iss.

Menthol,

Cocaine, $\frac{1}{2}$ grs. 3.

M. Use three to four times daily.

Very acute coryza.

- R Water,
- Alcohol (rectified), 3 iv.
- Carbolic acid, 3 ss.
- Menthol, grs. iv.
- Salammoniac, grs. 23 to 30.

M. Inhale.

Powders are best adapted to treating the nasal passages, as they remain longest in contact with the mucous membrane.

For epistaxis, the best new surgical remedy is the hot douche of 122° to 140° F.—*Deutsche med. Wochenschrift*, Jan. 24, 1889.

Citrate of Caffeine in Eclampsia.—B.

CORNEY reports the case of a woman aged 23, who gave birth to an undersized but full-time child at 7 A.M. August 21st, after an easy labor of three hours. About noon headache came on; at 9 P.M. vomiting took place, and at 11 P.M. convulsions set in, lasting, with intermissions, ten hours. The bromides, hyoscyamus, chloral hydrate, and chloroform did not seem to have much effect. The patient remained in a deep stupor for three nights, and the two intervening days. There was slight fever, a weak pulse varying from 80 to 132, great cyanosis, incontinence of urine, and left hemiplegia. As the vital powers appeared to be rapidly failing, it was necessary to take some decisive step. Corney objected to alcohol, because of the imperfect aeration of the blood that was going on, as evinced by the cyanosis. He was uncertain how much of the stupor and cardiac weakness was due to the disease, and how much to the bromide and chloral. Caffeine suggested itself, and he immediately injected grs. iii. of the citrate dissolved with grs. iiiss. of sodium salieylate in $\frac{1}{2}$ x. of distilled water. This was followed in an hour by six grains more given by mouth, and two grains every

two hours afterwards for six doses. Some general improvement took place, the pulse bettered, and the attacks of lividity ceased. The paralytic symptoms diminished in degree, and towards dawn on the 24th signs of returning consciousness were observed. The caffeine was continued for two days, and from this time the patient made a steady recovery. A week later the only remaining abnormalities were a certain degree of muscular weakness and debility.

—*Practitioner*, Feb., 1889.

Treatment of Vaginismus.—LUTAUD recommends, before resorting to operative treatment, to attempt the cure of this condition as follows: Introduce every night within the vulva a bougie composed of iodoform, gr. 15; extract of belladonna, gr. 7½; cacao butter, dr. 2½. Inject into the vagina three times daily a quart of hot water, to which has been added a teaspoonful of carbonate of soda, afterwards swabbing the vagina and vulva with a 10 per cent. solution of hydrochlorate of cocaine. This treatment is to be continued for a month, and attempts at coitus are to be practiced every two or three days after having anointed the vulva and penis with some lubricant. As parturition generally causes vaginismus to disappear, Lutaud advises that a hypodermic injection of $\frac{1}{6}$ of a grain of morphia should be given before coitus, as this, by its sedative action, may allow the act to be successfully performed, with pregnancy and the cure of the vaginismus as the result.—*Jour. de Méd. de Paris*, Nov. 18, 1888.

Thymol in the Treatment of Tuberculosis.

—DR. W. PHILIPOWICZ has administered thymol to 38 patients, 17 of whom were treated exclusively with this remedy, while the remaining 21 were given the preparation after diarrhoea had set in. The results of the first group were: 10 improvements and 4 deaths, while 3 remained under treatment. The results of the second

group are not given, as the treatment was not a uniform one. Thymol was administered in daily doses of 45 grains, being given in gelatine capsules, in which medium the burning taste of the drug was less noticeable. Under the administration of thymol a diarrhoea will generally disappear in from two to four days, except when there exists amyloid degeneration of the intestinal walls. The drug can be taken for some time without producing any harmful effects: in fact, it seemed to the author that under its administration both the appetite and digestion were improved. In haemoptysis it diminished the cough and the expectoration, it lowered the temperature, produced a gain in the body weight; in short a general improvement of the bodily condition, except in cases in which the disease was too far advanced.—*Wiener med. Presse*, Jan. 6, 1889.

Extirpation of the Thymus Gland.—In the *Finska Läkaresällskapets Handlingar* for November, 1888, are reported cases of partial extirpation of the gland for benign goitre, made by PROFESSOR AF. SCHULTEX, at Helsingfors. The operation as practiced in a series of cases extending from 1884-88 by different surgeons, had been invariably successful. Half the gland was removed in the three cases shown by Professor Af. Schulten, and he recommended removal of the degenerated portion only. The author remarks that in Finland goitre is for the most part sporadic. The cases so grave as to threaten life by suffocation by compressing the trachea are not common. But when there are dyspnoea and more or less difficulty in swallowing the necessity of operation is indicated. In these cases treatment with iodine was of no avail. The author recommends in the operation the passing of the drainage-tube behind the sterno-mastoid. In reviewing the various treatments he shows the much smaller proportion, 3 per cent., of deaths in partial excision than in total excision, in

which the mortality was 15 per cent. In rapidly growing goitre in young persons he recommends ligature of all the thyroid arteries as practiced by Wölfler.—*The London Medical Recorder*, Jan. 21, 1889.

The Contagiousness of Pneumonia.—In a long article on this subject Netter¹ reviews the epidemics of pneumonia which have been recorded, and adds a few other instances which have come within his own experience. His most important conclusions are as follows:

1. Pneumonia is a contagious disease of parasitic origin, and is transmissible either directly or by the intervention of a third person, or by inanimate objects, such as wearing apparel, etc.

2. The pneumococci are not destroyed by desiccation, and are diffusible through the air, but not to great distances, at most the interval between three hospital beds. They maintain their virulence for a period which has not yet been definitely determined, but probably never more than three years.

3. Contagion is possible during the entire course of the disease and even after recovery.

4. The period of incubation averages from five to seven days, but may vary between one and twenty.

5. Patients who have passed through a pneumonia are dangerous both to themselves and their neighbors as living micrococci may be found in their saliva many years after. Thence in part the epidemic appearance of the disease in certain families during long periods, and also its frequent recurrence in certain individuals who have once survived it.

6. Rigid quarantine of the patients seems unnecessary, but other patients and healthy persons should not be brought into too intimate relations with them. The sick-room must be kept well ventilated and clean, the sputum disinfected, and the cocci

lurking in the mouth destroyed so far as possible.—*Boston Medical and Surgical Journal*.

Magisterium Bismuthi in Infantile Summer Diarrhœa.

In the St. Petersburg weekly *Russkaia Meditina*, No. 30, 1888, Dr. A. PUGINOFF says that subnitrate of bismuth constitutes the most reliable remedy for epidemic summer diarrhoea in nurslings. He gives the drug in large doses, feeling sure that a pure preparation is excreted *per anum* wholly and in an unaltered state. Thus, to an infant of 4½ months, he administers 1½ or 2 grains every 2 hours. The main advantages of the subnitrate over all other means are stated to be these: 1. The drug does not give rise to any untoward accessory symptoms. 2. It is readily taken and perfectly well borne. 3. It acts on the intestinal tract both as a sedative and as an antiseptic.

Tuberculosis from Contagion.—At a meeting of the Finnish Medical Society at Helsingfors, Sept. 22, Mr. RUNEBERG reported a case of tuberculosis undoubtedly caused by contagion. The patient was a peasant, 39 years of age, who had an untainted family history, and showed in his own constitution no tendency to phthisis. Two years ago he was in perfect health; but the symptoms appeared a little after the death of his wife from consumption. He had occupied the same bed and nursed her during an illness of several years.—*The London Medical Recorder*.

Gluten as an Article of Diet.—DR. WOLTERING strongly recommends (in the *Allgem. Med. Central-Zeitung*) the use of gluten as an article of diet, on account of its great nutritive qualities and its very low price. By means of tables of analyses he shows that pure gluten bread is about three times as nourishing as meat, and that bread made with 40 per cent. of pure gluten contains more albumen than the best hare or chicken.

¹ Arch. Gén. de Méd. 1888, May-July.

EDITORIAL.**THE ILLINOIS STATE BOARD OF
HEALTH REPORT.**

The fifth "Report on Medical Education, Medical Colleges and the Regulation of the Practice of Medicine in the United States and Canada: 1765-1889," has been recently issued by the Secretary of the Illinois State Board of Health. There are many good things to be said of this Report. In the first place, it should be a matter of self-congratulation on the part of the people of the State that this is not only the only report of the same or similar nature issued in this country, but it is recognized as a valuable work of reference in all parts of the world. Chiefly by its work in raising the standard of medical education, in exposing "diploma mills," and in tracing up and prosecuting quackery, the Illinois State Board of Health has made itself a power that is felt over the United States and Canada, and even in far-away Australia.

It is pleasing to be able to say also, of this Report, that it is the most encouraging one ever issued by the Board. It shows that there is more promise of the raising of medical education to the desired standard than ever before, and that the Board and they that have spent so much time and written so much in the cause of higher medical education have not labored in vain. The Report says: "As to medical education in this country, the general drift of opinion to-day is decidedly in favor of the extension of the period of medical study to four years, and of attendance upon lectures to three full terms, with ample hospital practice and clinical instruction."

It is well known that the Board has passed the following resolution in regard to four years of study and attendance upon three courses of lectures:

"That the phrase, 'medical colleges in good standing,' in the first section of the

'Act to regulate the Practice of Medicine' in the State of Illinois, approved June 16, 1887, is hereby defined to include only those colleges, which shall, after the sessions of 1890-91 require four years of professional study including any time spent with a preceptor, and three regular courses of lectures, as conditions of graduation, and shall otherwise conform to the Schedule of Minimum Requirements heretofore adopted by the Board." To the "four years'" clause we have the serious objection that the time spent in so-called professional study before the student enters college is practically wasted time. As a matter of fact, preceptors do not teach students; the student may register under a preceptor, and obtain a certificate of one year's preceptorship, when he has spent his time entirely otherwise than in professional study. Half a century ago the preceptor did teach his student; now, in the vast majority of cases, he does not. The rule of the Board, therefore, is an incentive to deception. It would have been better had the Board left out the four years' clause, or else demanded four years' attendance upon lectures and at clinical work. The time for demanding four years of study in the colleges has not come, we think; meanwhile it is best, in our opinion, to demand simply three years of study in the colleges, without reference to so-called "previous study under a preceptor."

While we may not be in accord with "the general drift of opinion to-day," we believe that we stand on firm ground in this matter. Four years of college work is inevitable, and the sooner we get to it the better for the medical profession and for the people. Clinical teaching, which is by far too much neglected in this country, is neglected for want of time. "The difficulty," says Professor Wm. Osler (*Journal of the American Medical Association*, March 23, 1889), "lies entirely in the short three session course. The students, teachers and pa-

tients are here, and there is no reason why Philadelphia, New York, Boston, Baltimore, Chicago, St. Louis and Cincinnati should not have clinical teaching just as thorough, and just as systematic as is given to-day in Edinburgh, or on this continent, in Montreal. Large classes, in large cities with ample hospital facilities, can be perfectly well managed. The lack of a fourth year is the only obstacle."

The rule of the Board to which we object is a step in the direction of a four years' course. Already a number of colleges have announced that they will conform to this rule. We have no objection to proper steps in the direction of a four years' course, but our objection is to the manner of taking the step.

Unfortunately there are some colleges that are not affected by the regulations of the Illinois Board. We refer more particularly to some in the South and in the far West, from which graduates do not come before the Illinois State Board of Health. Unfortunately, too, these colleges do not fall under the restricting influences of any other similar board.

Probably one of the strongest arguments in favor of a higher standard of medical education to be found in the Report is the fact that of the 267 medical institutions (not including preparatory schools) embraced in the Report, only 131 are now in existence. And the fact that Canada has one extinct medical school, and the United States 130, seems sufficient to show that the methods of medical education are better in Canada than in the United States; and it would be a matter of congratulation if more were extinct, since the *raison d'être* of many of them is not apparent. In Germany twenty medical schools are sufficient for the forty-five million people of the country, and for students from all over the world; but in this country ninety-three, it would appear, are required for sixty million people. One thing, however, seems certain: there is an increas-

ing demand for better work on the part of the colleges; and the colleges that do not meet this demand must close their doors. The Report shows that there is an increased number of medical schools that have recognized their duties, but there are some that seem to be still "wedded to as low a standard as is at all compatible with even scant recognition by the medical profession."

On the whole, as has been said already, this is a very encouraging Report.

PHYSICIANS AS EXPERTS AND COUNSEL.

JUDGE WILLARD BARTLETT, of the New York Supreme Court, recently read a very interesting paper on "Some Relations of Scientific Experts to the Administration of the Law," before the Medico-Legal Society of New York. One thing that Judge Bartlett specially emphasized was that physicians should not act as experts and counsel at the same time. "The wise doctor, as it seems to me, will take care not to act in both capacities. If he is to testify in the case he will not act as assistant counsel; if he acts as assistant counsel he will keep off the witness stand. There is no good reason why the most distinguished physician should not place his professional knowledge at the service of one of the parties to a litigation which involves questions of medical science. To do so cannot justly subject him to reproach, but it does lessen his fitness and his usefulness as a witness in that litigation. In assisting counsel he will inevitably come to share the sentiments of counsel as to the result. Just as counsel will seek to bring out every fact that may prove beneficial to the cause of his client, and will endeavor to destroy, as far as may be, the effect of any proof which is injurious to him, so the medical man thus employed will suggest questions for the examination of witnesses on his own side, and for the cross-examination of witnesses on the other side, which will call out answers favorable to the party at whose instance he has been brought into the case.

All this goes on before the jury, who fully comprehend where the medical questions really come from. If afterward they see the doctor take the witness stand it is impossible that they should regard him as otherwise than prejudiced. However truthful his testimony may be, and however correct his opinions, his evidence is the evidence of a partisan, and this fact invariably detracts from its force and effect. When, therefore, a litigant or his lawyer applies to a physician or surgeon for assistance as an expert, the medical man should first ascertain whether it is desired that he shall be a witness in the case or shall act as adviser to counsel. If he be asked to appear as a witness he should carefully abstain from seeing the injured person or examining into the circumstances upon any agreement or understanding that his right to compensation for so doing is to depend upon the conclusion he reaches. I have reason to believe that cases are not unknown in which the counsel for the plaintiff has said to the physician: 'I think my client's injuries are serious and that he will never be a well man again. Go and see him for me. If you find he is not permanently hurt I shall not expect you to charge me anything for making the examination; but if you conclude that his injuries are incurable I will call you as a witness on the trial and pay you handsomely.'

Of course no honorable physician will accept such a proposition as this; he will insist that his compensation shall not be dependent upon the opinion he may form. His services are worth just so much, whatever his opinion may be. The physician that conforms to the honorable course is always prepared for the most severe cross-examination; and if in the cross-examination the fact is brought out that the party by whom he was called agreed to pay him for examining the injured person, whatever might be the opinion formed by the examination, this evidence will be of great weight with the jury. The attitude of the

medical man called as an expert should be as nearly impartial as possible. His sole desire should be to be true in his statements of fact, and sound in his expressions of opinion.

"It is well known that many railroad companies," says Judge Bartlett, "employ medical men continuously under salary to investigate all cases of personal injury which occur upon their lines, and to assist in the trial of the lawsuits to which such casualties give rise. The testimony of these witnesses is much less weighty and effective with a jury than the evidence of physicians called in for the particular case only, and I have more than once heard counsel ask: 'How long would the doctor continue to be employed by the railroad company unless he always testified in its favor?' Physicians thus permanently employed to treat accident cases are also peculiarly exposed to damaging cross-examination. But I have no disposition to criticise railroad companies or other corporations upon whose property accidents are liable to occur for employing physicians to protect them against false or exaggerated claims on account of personal injuries. Indeed, they are also instrumental in procuring the adjustment of well-founded claims, and no doubt hundreds of suits are settled every year upon the recommendation of the medical advisers of railway corporations. Instances sometimes occur, however, of gross invasions of private right by physicians so employed, who have been known to force their way into the houses and to the very bedsides of injured persons, without regard to the protests of their families, in order to ascertain the extent of the injuries immediately after they were inflicted, and to prepare themselves to testify on the subject if a suit should subsequently be brought. These trespasses are committed only against people in the humbler walks of life, who hardly know that they can rightfully expel the intruder under such cir-

cumstances. They are wholly without justification or excuse, and it is satisfactory to find that juries pay but little attention to medical testimony founded upon these unwelcome visits. In his well-known History of the Criminal Law of England, Sir James Fitz-James Stephen, one of the most distinguished judges of the High Court of Justice of the present time, suggests a course of conduct on the part of the medical witnesses in accident cases which he thinks would do away with the reproach which attaches to expert testimony because the witnesses are so often merely counsel in disguise. 'If medical men,' he says, 'laid down for themselves a positive rule that they would not give evidence unless before doing so they met in consultation the medical men to be called on the other side, and exchanged their views fully, so that the medical witnesses on the one side might know what was to be said by the medical witnesses on the other, they would be able to give a full and impartial account of the case which would not provoke cross-examination.' He truly observes that such a practice implies a high standard of honor and professional knowledge on the part of the witnesses called to give evidence, and the suggestion would seem almost Utopian, were it not that the writer adds: 'For many years this course has been invariably pursued by all the most eminent physicians and surgeons in Leeds, and the result is that in trials at Leeds (where actions for injuries in railway accidents and the like are very common) the medical witnesses are hardly ever cross-examined at all, and it is by no means uncommon for them to be called on one side only.' This is the best possible answer to the objection that the plan assumes a higher standard of conduct than is practicable. Experience has shown that it does not; and what English medical men can bring about in the borough of Leeds, American medical men ought surely to be able to accomplish."

Judge Bartlett then spoke of the laws in regard to the commitment and confinement of the insane. A physician is not justified, he says, "in certifying to the insanity of a person he is called to see, simply because some member of the patient's family gives him a long history of the hallucinations of the invalid, or because some other doctor assures him that the man is mad. He must examine into the case himself to the best of his ability and in the light of all the medical knowledge he possesses. If he does this he will incur no liability even for an erroneous judgment. If he does less than this, and certifies that a person is insane who turns out to have been sane at the time, he can be held responsible by the injured party. Too much care can hardly be taken by physicians in the preparation of lunacy certificates, or by judges in passing upon them when presented for approval. In my opinion the judge should always require the attendance of one of the physicians before him, if not both, and should personally inquire as to the facts in addition to the matters set out in the certificate. I am aware that some physicians deem it a hardship to be compelled to attend court for this purpose, but such should let others act in their stead. The approval of the certificate by the judge was not intended to be only a formality. In fact, no act in the administration of this portion of the lunacy laws can properly be deemed a mere matter of form. The popular distrust of the management of lunatic asylums, however, has always been so great, and the horrors attending the incarceration of a sane person in a mad house appeal so vividly to the imagination, that the State could well afford to do something to assure the public from time to time that none but lunatics are prisoners in these institutions. This might be accomplished through the supervision of the courts, to whose care the interests of all persons of unsound mind are expressly committed by statute. If in each of the five judicial departments into

which the State is divided the Supreme Court were empowered to appoint a qualified expert in insanity every year, whose duty it should be personally to examine every person imprisoned as a lunatic within that department and report the results of his examination to the court, it would be rendered tolerably certain that no abuses were being perpetrated, and the assurance would be worth all it might cost in the way of compensation to the five physicians for their services."

SOCIETY REPORTS.

CHICAGO MEDICAL SOCIETY.

Regular Meeting December 27, 1888.

THE PRESIDENT IN THE CHAIR.

DR. J. R. BRANDT read a paper on

DIPHTHERIA MALIGNA.

He said: When I state that in 1881 in Buda Pesth there was an epidemic during which 43,000 persons were attacked, and 19,000 died, nearly 45 per cent., none recovering under fifteen years of age; and that in 1883, in New York city, there were 3,502 cases and 2,090 deaths, or over 59 per cent., we must conclude that the study of this disease alone is of sufficient importance to require and demand the fullest attention of the medical profession, and we should search continually for a prophylactic or a remedy.

In regard to diagnosis, it may seem as though little is required to be said, as the diagnosis is frequently made by the laity before the physician is called. Some eight years ago I thought I had made a discovery of several prodromatic signs in diphtheria. Since then I have gone on making careful investigations, the results of which prove that I was correct in my impressions. At that time I made note of my alleged discoveries and published a short notice in their regard in the *Medical Record*, of which the following is a copy: "In February, 1881, Dr. J. R. Brandt, of Robinson,

Wis., writes: I wish to state for the benefit of the profession that in examining members of families suffering from diphtheria I have found in several of those not afflicted a notable fall of temperature, from half a degree to a degree and a half, and a noticeable slowness of pulse, irregularity of the heart's action, loss of beat every 3", 5", 7", or 3", 9", 14", from 12 to 36 hours before there was any other exhibition of the disease—such cases I have found to be malignant." My rule is to carefully examine each member seemingly unaffected, as to temperature, action of heart, pulse, and complexion of fauces. I leave a thermometer with a well-instructed person with orders to take temperature every hour, night and day, either in groin, axilla, mouth or rectum, and keep a record of same until I come again, always making two or three visits a day, even if I have to neglect other work. Then when I find two out of three of these symptoms exhibited I begin treatment at once. I have since 1886 had 149 cases which exhibited these symptoms, and I have been able to save all but one, which case was tubercular.

In regard to surgical therapeutics, caustics, such as argenti nitrás or hydrochloric acid fortier are only mentioned to be condemned. Blistering the neck and chest by using any vesicants as counter irritation only give a larger surface for developing an exudate and poisoning the system. Sprays in my hands have not given satisfaction that others claim. I have seen several cases of broncho-pneumonia induced by the use of the spray; even an antiseptic spray softens the membrane and small particles are carried by inhalation into the air vesicles, plugging them and establishing centers for spreading the disease, and these particles also produce mechanical obstruction and prevent oxidation of the blood. Other particles are swallowed and interfere with digestion. They also may be absorbed and carried into the circulation. The same reasoning

is eminently true of inhalants. Irrigation when applied to the nasal cavities is of incalculable advantage, as nasal diphtheria is very fatal on account of the large surface attacked and their lymph communication with the rest of the body. (Jacobi) I take a household syringe and attach it to a soft, hollow bougie and introduce it into the nasal cavity, horizontally if the patient is sitting, and perpendicularly if lying in the nurse's lap, gently compressing the bulb and turning the bougie so that the stream from it will be applied to different parts with sufficient force to dislodge portions of the membrane and force them out and bathe the surface with antiseptic fluid. I like this better than the rubber open at the end, by using which you may force particles down the throat which should be avoided. I use for this purpose bichlo. sol. 1-5000, warm, and every three and four hours, or even every hour for a time, endeavoring to keep an open passage. I use at one time from 4 to 6 ozs. in each cavity; nothing will reduce adenitis as irrigation. Gargles have never in my hands been of any advantage and I gave them up long ago.

I have never seen a patient recover on whom tracheotomy had been performed after crepitant and subcrepitant rales had developed at the base of the lungs. If not allowed to operate before this condition arises I decline to operate, for we only prolong the sufferings of the patient. I believe tracheotomy should be prophylactic, the same as in medical therapeutics. Throw the responsibility on the relatives and friends and give a very guarded prognosis, even when the operation is done early. As to intubation, much is now being said in its favor, and in feeble and young patients it is giving satisfaction, but in malignant cases, such as this article refers to, I prefer tracheotomy. In intubation portions of false membrane may be forced down the trachea, or the tube come in contact with the membrane and hold in situ,

where it will be absorbed; the tube, by pressure, may cut off circulation at that point and increase the putrefying surface. Should the tube become plugged from below, there is danger of suffocation before an expert might be obtained to remove it, as in tracheotomy an expert can remove the canula at once. In cases (as Dr. Parker, of London, has pointed out) in which the dry epiglottic folds have become tumefied, it is impossible to introduce the tube. Admitting this to be awkwardness, it only shows that time and practice will have to be taken to make one an expert, for expertness is most certainly required to make this procedure a success.

Dr. Waxham has reported 160 cases with 44 recoveries, making 28 per cent. of recoveries, of 1,072 tracheotomies performed in various parts of the United States. There have been 287 recoveries, or 27 per cent., which look favorable for tubage, but I think before giving statistics we must have more intubation. I believe the better way would be to intubate in non-malignants, and to perform tracheotomy in malignants; always intubate early or not at all.

In the treatment of patients with diphtheria, there are several hygienic rules I strictly enforce: first sequestration if it can possibly be done. In farming districts I utilize the barns, smoke-houses and granaries, in winter; in summer and fall I improvise tents. I give them earthen floors if possible, I never allow the wooden floors to be washed, but have them sprinkled with a bichloride solution every six hours, 1-1000. Plenty of fresh air constantly passing through the rooms, the drinkable water always boiled, and afterward cooled by surrounding it with ice in vessels. Milk I order boiled and treated in the same way. I never allow the patient to take one step under any circumstance; they must always be carried or handled in such a manner that they will make no exertion. I make from three to six visits each day, personally

and carefully examining their throats, using a head mirror at night and always wearing glasses to protect my eyes. With malignants I have remained for seventy-two consecutive hours. I will not leave a case until some suitable person can be obtained and whom I have personally instructed. During the epidemic in Wisconsin, which lasted from 1876 to 1880, I used every remedy which gave any reason for success, mentioned in the current medical literature of the day, and I have found much more to condemn than to approve; so many were worse than worthless that I will give only those which have proved to be of the most value in my hands, and the manner of using them. I advise general and local treatment, as I consider it a systemic disease with local manifestations. The use of alkalines was very unsatisfactory, but the reason is patent when we reflect that putrefactive changes take place with great rapidity in alkaline albuminoids, and less when there is an acid. Acid retards putrefactive changes, and so does alcohol, and herein lies the reasons for rational treatment. In malignant cases I give acids to antagonize the changes going on and producing ptomaines; I give alcoholic stimulants which also retard putrefaction and degeneration, and give food, best milk, or milk and coffee, cream and coffee, anoint with cream and whisky the whole body every six hours. Give rectal injection of the most easily digested foods to make new blood to supply the economy which is below par. The ptomaine may be eliminated or oxidized. The inhalation of oxygen is worthy of trial where it can be done, and I have been pleased with its effects; it acts both as a destroyer of the ptomaines and retards putrefaction. I use tr. ferri and the bichlor. hydrag. after the following formula for an adult:

Tr. chlor. iron 3 iv.

Bichlor. mercury gr. i.

Syrup simple to 3 iv.

Sig. One teaspoonful every two hours.

Alternate with

Hydrochloric acid dil 3 iv.

Com. tr. cinchon 3 iss.

Syr. sim. to 3 iv.

Sig. Teaspoonful every two hours.

In a few moments after each I give whisky mixed with water and sugar from 1 to 3 teaspoonfuls, in a moment after I give $\frac{1}{4}$ of a teacupful of milk that has been boiled and cooled in ice. This treatment I continue for from 24 to 72 hours, depending upon the gravity of the case, when I give a little more time, *i. e.* one hour and a half for 24 or 36 hours, and if all is doing well I then alternate every two hours until recovery. When I find an exudate on the tonsils I touch it with a solution of subsulphate of iron, one half, and bichloride of mercury, one-half, 1 to 250, using a camel's hair brush; applying this preparation every two hours just previous to administering the iron mixture; immediately I remove all the shreds of membrane I can, even using dissecting forceps for the purpose; then on this surface I again apply the above antiseptic solution. I have greater dread of the superimposed layers of putrefying membrane being absorbed and completely saturating the system, and producing more ptomaines, than I have of doing harm by more or less irritating these parts. All agree that the removal of the putrefying membrane from the nasal cavities by irrigation is good treatment; if good for one why not for another part? In malignant cases that do recover the patients should not be allowed to leave their bed for three or four weeks, and watched carefully for heart failure. Malignant diphtheria in tuberculous subjects is nearly always fatal. Malignants develop mild forms in others and the converse; these deductions I have derived from, and after having treated and recorded in the last twelve years 2,600 cases.

There are certain precautions necessary to be taken by the physician, and first I deem it criminal for a physician to attend

cases of confinement while in attendance upon either scarlatina, diphtheria or erysipelas. As I have found dogs and rabbits infected with diphtheria, I think all pets should be removed from the house at once, as the more pets the more sources of infection. In all cases of nursing infants, to medicate the mother is to save the child, that is, if the child will take the breast, and they will take the breast in most cases where they will refuse every thing else. Powders have not been satisfactory except when applied to the exudate found on the genitalia of females, and here calomel and tannic acid has been of great benefit. Pilocarpine has been followed by such extreme exhaustion that I deem it too hazardous to risk. In heart failure I depend upon alcoholic stimulants and rest, not allowing the patient to make any exertion whatever. Digitalis is so poorly borne by the stomach that I give it *per rectum* or hypodermically; I never use digitaline. Camphor and carbolic acid in equal parts applied to the exudate was not as satisfactory as sub-sulphate of iron and bichloride of mercury. I have shortened the course of many cases by giving one full dose of calomel at the time of my first visit.

DR. F. E. WAXHAM: I have listened with pleasure and profit to this valuable paper, but cannot agree with the author in all his conclusions. The title of the paper is "Diphtheria Maligna." It is often difficult to draw the line between malignant and non-malignant diphtheria, to state where one leaves off and the other begins. I make three classifications of the disease, the mild, the semi-malignant, and the malignant, styling those cases malignant that are characterized by alarming symptoms, by great depression and by a rapidly fatal termination. I believe that those malignant cases that recover are very few and far between. The line of treatment I have found most useful in the management of malignant cases has been the frequent use of bichloride of mercury, alterhated

with tincture of iron and glycerine, the use of a gargle of bichloride of mercury in dilute alcohol, or, where the patient cannot gargle, the use of the same solution, by the atomizer; free stimulation, abundant nourishment and appropriate treatment of the nasal cavities. Under this treatment I have seen semi-malignant cases, that promised rapid development into malignancy, yield and gradually recover. The fault I usually find is that the medicines are not given with sufficient frequency. The bichloride of mercury should be given at least every hour, alternating with the tincture of iron, so that the throat will be bathed at least every half hour with these solutions. I do not believe that it is best to harrass the patient by the frequent application of solvents to the diphtheritic membrane, for I have learned not to fear diphtheritic membrane as long as it does not invade the larynx and is frequently bathed with antiseptic solutions.

In regard to the surgical treatment of malignant diphtheria, we may well say that it is of little or no avail. In the semi-malignant forms, intubation will save many, but in the very malignant forms of diphtheria I believe that intubation, tracheotomy or any other surgical measure is entirely useless as far as saving life is concerned. I remember two years ago I attempted to perform tracheotomy in a case of malignant diphtheria in which the larynx had become invaded. Almost with the first breath of the anaesthetic, the respiration ceased and the child was dead before the first incision was made.

I should, perhaps, say a word in regard to the prevention of malignant diphtheria. Inasmuch as the medicinal and surgical treatment of malignant diphtheria is discouraging, the preventive treatment is of corresponding importance. It, however, is oftentimes a difficult problem to know how we shall prevent the spread of malignant diphtheria, especially when it occurs in the homes of the poor and among the over-

crowded. We will frequently be called to a case of malignant diphtheria, where the child, coming down with the disease, is surrounded with six or eight other children, and we will usually find them crowded in two or three small rooms, and usually two or three of the well children will be sharing the bed at night with the patient.

It becomes impossible to isolate these patients on account of their crowded condition, and very seldom indeed are the friends able to send the healthy children away from home, because they have no friends or relatives who will take them, and there is in this city no hospital where poor patients will be received when suffering from diphtheria. True, if patients have an abundance of means, they can secure a private room in any of our general hospitals, but poor people, who have not means, find it impossible to gain admission to any of our hospitals in Chicago. I have been informed that a young woman with diphtheria recently made application to our County Hospital, but she found it impossible to gain admission—and sick, destitute and penniless she was turned out upon the street.

I hope the time is not far distant when our commissioners will establish a pavilion for infectious diseases, or, this failing, I hope a hospital will be established in Chicago for the exclusive use of these diphtheritic patients. If we send the first patient that comes down with diphtheria to such a hospital, we will frequently be able to prevent the other children from contracting the disease. Indeed, I believe if we had such a hospital, where patients could secure careful nursing and skillful treatment, that it would be overcrowded, and we should be successful in saving many patients and very greatly lessening the mortality from this disease.

DR. J. H. CHEW read a paper entitled

DEVENTER'S METHOD OF DELIVERING THE
AFTER-COMING HEAD.

A year or more ago a member of this

society, while "pondering over many a quaint and curious volume of forgotten lore," discovered the lost art of delivering the after-coming head by the method practiced and referred to by Deventer, over 160 years ago. In a paper read before the International Medical Congress in Washington, Dr. Bartlett described this as differing from the usual method in the following points: As soon as the child has passed so far as the base of the thorax, extractive efforts are to be made, the woman resting on her back, not in the line of the body of the parturient, but in a direction perpendicular to the floor. When the arms are within reach we are not to stop and draw them down, a thing often difficult to perform and requiring much time; but to examine and see that they are extended by the side of the head and in front of the parietal protuberances. We are then to make forcible traction in the same direction, at the same time urging the mother to bear down with all her power, and if necessary, we are to make pressure upon the occipital end of the head as nearly behind the anterior wall of the pelvis as practicable. The occiput appears under the pubes and the delivery is accomplished with the head in forcible extension instead of flexion. I have been fortunate in delivering by this method, and thereby, I believe, saved the life of the child and spared the mother many minutes of suffering.

I was called the night of October 3, to attend Mrs. S. in labor at eight months: The child presented by both feet, and the labor progressed satisfactorily until the shoulders were delivered—the arms were delivered with the shoulders. I endeavored to deliver in the usual way, but in trying to reach the chin found it high up and the head extended. We immediately placed the woman upon her side and I made traction directly backward, at a right angle to the axis of the mother's body, and then when the occiput appeared under the

pubes backward and slightly upward towards the mother's head, at the same time Dr. Wadsworth, who assisted me in the case, made pressure on the head just back of the pubes; in a few moments we had the pleasure of seeing the occiput glide from under the pubes and the delivery accomplished; and to my gratification and surprise—for I feared the traction had been carried to a dangerous degree—the child almost immediately cried out. The child was of average size and has flourished since, although bottle-fed. The mother's recovery from the labor was uninterrupted, although under the most adverse circumstances.

DR. JOHN BARTLETT: The case presented this evening by Dr. Chew and a similar one occurring in the practice of Dr. Wadsworth, are the only ones which have come to my knowledge within the year. It would seem at first glance surprising that experience in this mode of delivering the after-coming head is not gained more rapidly. A little reflection, however, will make it plain why Deventer's method is not more often put to the test. The whole tendency of the teaching regarding the management of head-last labors has been to mould the practice of the operator into a line of action the reverse of the one in question. The practitioner has been taught that one of the chief ills which may overtake an accoucheur in footling cases arises from the departure of the chin from the breast, the extension of the head. From education, and even from habit, his aim has been to prevent this departure of the chin and to secure the maintenance of the flexed attitude of the head. In the majority of the head-last cases occurring to experienced practitioners there is a fairly confident assurance that delivery will occur, or can be effected safely to the child, by the ordinary mechanism and methods. Under these circumstances the adoption *ab initio* of Deventer's plan savors too much of experimentation; so that the conservative

accoucheur, recognizing his obligation to his patients as paramount to questions of scientific obstetrical interest, delivers in the old way at the sacrifice of experience in the new method.

In ordinary cases, at least when the Deventer method is practiced in the cautious manner which the obstetrician would at first naturally adopt, it will be found that the extension of the chin will take place only so far as to lock the head in the pelvis so tightly as to lead the operator to desist from his purpose of delivering by the new plan. This want of success is not always due to difficulties inherent in the method. In good part it may be ascribed to the imperfect or inefficient practice of the plan.

The errors usually committed in attempting to deliver by the method of Deventer are: failure promptly to decide upon using that method and consequent delay in drawing the child downward; failure to regard Deventer's caution not to bring down the arms; failure to direct properly the traction, which is generally made directly downward, when it should be downward and slightly backward; failure to make sufficient extractive effort; failure to sway the body of the child from side to side; failure to secure the co-operation of the patient, by urging her to assist with all her power; failure to exert proper auxiliary pressure downward upon the head.

What, it will be inquired, is the result in the event of one's having tried the Deventer method and failed therein? Naturally the inexperience in these efforts would have misgivings lest the second condition of affairs should be worse than the first. One might naturally suppose that the head would be found locked in the pelvis in the hitherto much dreaded attitude of extension. Such is not the case. According to my limited experience it is because the head is not in extension that delivery by the new method has failed. So far, neither my neighbors nor myself have

in anywise added to the difficulties of the case by having made an unsuccessful effort to deliver by the new method. In every instance, on the contrary, the delivery appears to have been advanced by the unsuccessful effort to end the labor by extension. The tractions made have brought the child lower, so that embarrassments as regards the arms have been lessened. Thus, in one case mentioned by Dr. J. W. Niles: whereas, prior to the traction, the doctor had been unable to bring down the arms, these fell down during his unsuccessful effort at delivery after the Deventer plan. And again, after such attempts, the head is found lower in the pelvis, especially as regards the occiput. Now, the end of the head-ovoid having been thus advanced apace, in our experience, the subsequent advance of the opposite extremity, the chin, by the old methods, has been decidedly facilitated.

The question has been asked whether in the present state of our knowledge of this method the practitioner be justified in attempting it in every case? Possibly a perfect knowledge of Deventer's method may finally establish it as the preferable mode of delivery; but in our present inexperience the question just put must be answered negatively. The method may be resorted to when the child is small, or when, as sometimes happens after turning, or in natural labor, as in the cases reported this evening, there is difficulty in delivering in the usual way, whether because the arms can not be brought down, or especially because the chin has departed from the chest in such a manner as to offer an obstacle to the ordinary procedure. A knowledge of the Deventer method even in the developmental state in which it now seems to be, proves a satisfaction to the obstetrician in attendance on a head-last case, for, should difficulty arise with the arms, he can draw the body down in the Deventer line with the confidence of bringing them within reach and delivering them, or, he can feel re-

assured, the chin being upward, in leaving them to be delivered alongside of the head. Formerly if the chin was found departed from the chest and "hooked up," as the expression was, over the brim of the pelvis, the practitioner regarded the situation as most serious, and even where unusual skill and experience enabled the operator to reverse the position of the head, or, failing in this, to successfully apply the forceps, the child was generally lost by delay. Instead of resorting to the older unsatisfactory method in such cases, he may now draw downward in the Deventer line, with good hope that the head will "shoot through easily."

Certain peculiarities of the pelvis, or of the head, may have a tendency to increase the difficulty of delivering by this method. In a multipara in the practice of Dr. J. M. Hall, in which the pelvis was large and the child small, everything promised success in the employment of this plan. Dr. Hall attempted the delivery exactly *secundem artem*, and yet the chin appeared before the occiput. In this case the head was hydrocephalic, large, round and soft, a condition which it is not to be doubted antagonized the efforts to secure a Deventer delivery.

It may be well here to caution the practitioner against too forcibly pressing the thorax of the child against the perineum, lest internal injury be caused thereby. Against the use of too great extractive force it is hardly necessary to give a caution. And yet the practitioner should have a knowledge of such facts, as the experience of Goodell and others teaches regarding what may be deemed an allowable degree of traction.

Smellie, in referring to Deventer's method, speaks of the head turning in the pelvis, but possibly the first step in this method may occur before the head enters the pelvis; namely, the catching of the chin on the pelvic brim, and the descent of the occiput in advance of it.

The more I see of the attempts to deliver by Deventer's method the more I incline to the opinion that in this form of delivery, as in head-first cases, the *sine qua non* of success is the early descent of the occiput. There is reason to believe that there was something in the manner of the execution of his method by Deventer which led to this early separation of the chin from the breast. Possibly the traction on the body of the child, recommended by Deventer, "so soon as it is out above half way," was so directed as to invite the very end in question, the arrest of the chin and the descent of the occiput in advance of it.

Hitherto in our experience, when the head has been locked in the pelvis from unsuccessful extractive efforts, its long diameters have been found resting in the conjugate diameter. Now, nothing would seem to be plainer than that the turning of the head on its long axis could take place more readily in an oblique diameter than in the antero-posterior one. In the one case, the surfaces resisting the extremities of the lever in our effort at extraction are the posterior face of the body of the pubic bones, and the anterior surface of the sacrum. In the other case they are the soft tissues overlying osseous lacunæ, the foramina ovalia, and the great sacro sciatic notches.

DR. J. S. KNOX: It strikes me, in listening to the paper and its arguments, that the purpose is to convince us that the best method of delivering the after-coming head, is by backward traction; causing extension of the chin, the upward passage of the arms, and descent of the occiput. It is beyond question that, with the chin flexed on the chest, the chin descending first, and the occiput last, the head rotating on the symphysis pubes, the child presents the smallest diameters and the most favorable engagement. Deventer's method, to excel, must present smaller cephalic diameters, and a more favorable adjustment to the maternal passage. I believe this to be im-

possible. It is a mistaken idea that in Deventer's method the chin catches at the superior strait and the occiput descends and glides under the pubic arch. It is a mechanical impossibility. The distance from the extended chin to the sternum is about two and a half inches, and from the promontory of the sacrum to the point of the coccyx over five inches. Of necessity then the occiput and chest of the child must engage in the pelvis together, in order to deliver the occiput. This is impossible.

In Deventer's method, therefore, the after-coming head must pass through the superior strait, in a flexed position, until the throat of the child reaches the perineum. Backward traction will then fix the chin and bring down the occiput, accomplishing its delivery under the pubic arch. To do this, however, the longest diameter of the head, the occipito-mental, must sweep through the oblique diameter of the maternal pelvis. What is the advantage in substituting a cephalic diameter of $5\frac{1}{4}$ inches for one of $3\frac{3}{4}$? Deventer's method undoubtedly has its place. In those cases where injudicious traction has been made on the body, and the chin has extended, and the arms passed up, this method will afford a much easier delivery of the head. I have carefully studied Dr. Bartlett's paper presented to the International Congress, and have a high regard for his obstetric opinions. But why we should provoke a malposition, and then hunt for a new method of delivery, I cannot see.

DR. FRANK CARY: Dr. Schwandt has tried this method in my service in St. Luke's hospital, and I was very favorably impressed with it.

DR. E. J. SCHWANDT: The two methods, I think, are quite different. The method referred to by Dr. Cary was in two or three breech presentations which occurred while I was serving in the obstetrical department of the hospital. Before this method became generally known I did as I was taught

in my earlier days, I maintained firm pressure on the fundus uteri and thus prevented extension or departure of the chin from the chest and unfolding of the arms. I therefore concluded to deliver, in the next breech presentation, by the method now under discussion; taking the body of the child, the arms being unborn, and drawing it strongly backwards so that the abdomen of the child came in contact with the buttocks of the mother, paying no attention whatever to extension of the head and unfolding of the arms. In that way I noticed the occiput being born with the chin and arms extended—the occiput slipping out under the symphysis pubes. Furthermore the perineum is not usually ruptured as one might suppose by this method and birth is easy.

DR. ROSA H. ENGERT: This is the first time that I have heard of Dr. Bartlett's method, but I am very much pleased to find that it is the one that I have employed as long as I have been in practice. Once I did not succeed in getting the child alive and after that I practiced on the phantom to find a better way of getting the foetus out, and found that it was the most natural way to draw the body of the foetus toward the back of the woman, she being in a side position, the head then passing through very easily, in the smallest diameter, with the occiput coming out first from under the pubes.

DR. JOHN BARTLETT: If Deventer's statements are to be believed, and Smellie's interpretation of that author's plan is to be accepted, delivery with the occiput foremost "sometimes succeeds better than the other method." Dr. Knox's success in delivering living children in head-last labors, by the accepted modes, is certainly very exceptional. According to statistics cited by Zweifel, in 3,475 versions the mortality to the child was nearly 59 per cent. I have taken a very conservative position in the matter of employing the "new" method. I am not convinced that Deven-

ter's plan is yet fully understood. There is, however, certainly enough of evidence in favor of the method as described by Smellie to warrant us in trying it in proper cases.

There is one point in the method of delivery according to Deventer, which has not been touched upon here, and which should be duly considered because it is one of those mechanical conditions in which this plan seems to offer a great advantage over the accepted modes of delivery. When we try to extract the head by ordinary modes, the arms being extended alongside of it, our efforts tend to flex the head and to force it as a wedge more and more firmly between the arms, which thus *key* it in the bony ring of the inferior strait. In the Deventer plan, on the contrary, the movement of extension releases the wedge from between the arms, these slipping more and more over the face of the child, so that the head is delivered before them. I call your attention to the further fact, that while in the ordinary method of delivery the extended arms are crowded towards osseous tissue, in the plan under discussion they are pressed against less unyielding structures.

Regular Meeting, January 8, 1889.

THE PRESIDENT IN THE CHAIR.

DR. F. S. JOHNSON read a paper entitled
PATHOLOGY OF DIPHTHERIA.

Diphtheria is an acute specific infectious and contagious disease, with local and general manifestations and characteristics. The local lesions are found in the upper air passages, especially in the pharynx—but also in nose, larynx, trachea and deeper parts of the respiratory tract. These may, however, occur primarily in other parts of the body. The general manifestations are fever and concomitant symptoms. The local manifestations are inflammation and the formation of a false membrane on the surface, or in the superficial portions of the tissue.

From the clinical standpoint, it is difficult to say whether diphtheria is primarily a general or local disease. The general symptoms usually appear before the local trouble is manifested. On the other hand, the local trouble sometimes exists with scarcely noticeable general symptoms. The poison seems to usually gain access to the body with the inspired air.

By analogy, the pathogenesis of the disease is at the present time commonly attributed to micro-organisms, although no form has yet been found to satisfy the conditions formulated by Koch, and held by all experimenters as necessary for proof, viz: Micro-organisms are sometimes found in the kidneys, but according to Birch-Hirschfeld only in cases of severe sepsis.

First.—The micro-organism must be present in all cases of the disease.

Second.—Pure cultures of this micro-organism must be capable of producing the disease.

Third.—The micro-organism must be found in the tissue of the animal in which the disease is experimentally produced.

No one form has yet been found to be invariably present. No form has been found which always produces the characteristic phenomena of the disease and which does not give rise to other forms of poisoning. In experiments upon animals the results of inoculation have, in most instances, either been negative or more nearly resembling the phenomena of pyæmia and septæmia. All the forms found in diphtheritic membranes have been found in the human mouth under normal conditions. The recent researches into the mode of action of micro-organisms in disease have led to a change in the generally accepted views upon the subject. It is now held that micro-organisms do not in themselves act as poisons, or to any extent mechanically by forming capillary emboli, but that by the splitting up of proteid substances they produce ptomaines and set free fer-

ments, and that these are agents in the causation of disease.

Anatomically classified, the local phenomena of diphtheria are:

Catarrhal inflammation.

Croupous inflammation.

Diphtheritic inflammation.

Topographically classified, the disease is diphtheria when it occurs in the pharynx and nose; croupous or laryngeal diphtheria when it occurs in the larynx.

It is proper here to mention other specific disease forms with similar or identical local manifestations:

Diphtheritic inflammations, occurring in the course of the exanthematous fevers.

Wound diphtheria.

Dysentery.

Puerperal Endometritis.

Diphtheritic Cystitis.

Etiologically considered, there may be as many forms as there are agents capable of destroying tissue and exciting inflammation.

In extremely mild cases the local changes are indistinguishable from those of simple catarrhal inflammation, and anatomically they belong to this class. The damage to the mucous membrane by the specific poison is here not sufficient to destroy any part of it, but simply to excite a moderate inflammation. And under these conditions the exudations from the blood-vessels in reaching the surface is filtered through the epithelium of the mucous membrane and is thereby rendered non-coagulable, and is removed from the parts affected in the same manner as are the normal secretions. In these cases there is no false membrane, though the cause is the specific poison of diphtheria. To what extent these mild cases occur it is impossible to say, because the presence or absence of a false membrane usually determines the diagnosis.

The false membrane or diphtheritic membrane is the result of combined inflammation, tissue death and coagulation within the densely infiltrated tissue. The thick-

ness of the membrane varies with the depth to which the tissue is destroyed. The essential anatomical distinction between simple catarrh and diphtheritic forms of inflammation of mucous membranes lies in death of the tissue, especially of the epithelium.

When the epithelium has been removed in whatever way, inflammatory exudations upon the denuded surface will coagulate, thus forming a false membrane. The destruction of the epithelium by chemical agents and heat is followed by the formation of a coagulum upon the surface; or in other words, a false membrane.

Anatomically, there are two varieties of pseudo-membranes—croupous and diphtheritic. In the former the epithelium only is destroyed, and the depth of the pseudo-membrane is limited by the basement membrane of the mucosa. In the latter the underlying tissues also suffer death. Mucosa, sub-mucosa, and even the deeper tissues, are involved in the formation of the pseudo-membrane.

In the pathological processes, the etiological agent, viz: the diphtheritic poison, is the prime factor. It seriously impairs the vitality of the tissues or destroys them outright. This injury produces inflammation, and the already damaged tissues are infiltrated and swollen by the copious exudation from the blood-vessels. Death of the entire mass soon follows, and with it coagulation. This coagulation of tissue and inflammatory exudate, constitutes the false membrane.

The greater the injury to the tissue, the deeper the processes reach and the more intense the inflammation. The character of the exudation depends upon this condition. In the milder forms the exudate is made up almost wholly of leucocytes and plasma; in the severer forms large numbers of red blood-corpuscles are extravasated, and the infiltration is more or less haemorrhagic in character.

The diphtheritic membrane usually ap-

pears first upon the tonsils, sometimes upon the soft palate, or even in the nose, and not infrequently in the larynx. At first it is a thin, irregularly oval white or grayish patch, or even merely a lace-like layer of fibrinous shreds upon the surface. When fairly formed the membrane is tough and firmly adherent.

In croupous membranes the firmness of the attachments depends in a measure upon the character of the underlying mucous membrane. When this is closely adherent to the parts beneath, the pseudo-membrane is less easily cast off. Thus, in the larynx, pseudo-membranes are more firmly attached to the vocal chords and to the lower surface of the epiglottis than over other parts. As the local changes go on, the tissue becomes involved to a greater depth, and this extreme infiltration adds to the bulk of coagulable material. Thus, what began as a croupous membrane may become diphtheritic in character. As it undergoes degeneration it becomes yellowish and fatty. It is gradually cast off as a whole, or in shreds or layers.

In severer cases the coagulum contains a variable proportion of red blood-corpuscles, and the membrane is darker and greenish.

In the most severe forms the affection spreads rapidly from the beginning; the membrane is dirty, haemorrhagic in appearance, and foul smelling.

Gangrene seldom occurs, and when present it is probably not due to the intensity of inflammatory processes, but to the direct effect of the virulent poison.

The false-membranes may sometimes, in all probability, be the seat of invasion by micro-organism capable of causing pyæmia or septicæmia. In these cases the individuals may suffer from this infection in addition to the existing diphtheria, in the same manner as though infected through any exposed wound. This condition may seriously complicate the symptoms of the primary disease. Gangrene, too, may be due to

other causes than the diphtheritic poison acting upon the already damaged tissues.

Histologically, pseudo-membranes consist of homogeneous flakes and strands and fibrinous threads, enmeshing leucocytes and red blood-corpuscles. Frequently the quantity of leucocytes is so great as to obscure the fibrinous coagulum. Remnants of the former tissues are also included in the membrane. As the membrane undergoes degeneration the fibrin becomes finely granular, and the appearance of a net-work is lost. The tissues immediately underlying the false membrane are densely infiltrated. On tearing off the latter, the surface is mottled red and pale; there are seen bleeding points, interstitial haemorrhages and shreds, and masses of adherent and more or less degenerated pseudo-membrane.

The membrane may extend from the primary seat to surrounding parts, as from the tonsils to other parts of the pharynx into the eustachian tubes and the nose, seldom into the oesophagus; more frequently into the larynx, trachea and bronchi. When stenosis of the larynx occurs, there is varying acute emphysema of the upper lobes, and hyperæmia of the lower lobes of the lungs. If, when in this condition, the smaller bronchi are invaded or are closed by aspiration of bits of pseudo-membrane, there is occlusion of the bronchi and bronchioles, and consequent atelectasia and lobular pneumonia. These conditions rarely occur in the upper lobes, because of the emphysema and consequent anaemia. Under these circumstances, if air is freely admitted to the lungs by tracheotomy, the upper lobes are more readily infected.

With general infection of the body are associated more or less extensive pathological changes in the various tissues and organs. Some of these are manifested chiefly by derangement of physiological functions.

The anatomical changes result from the direct affect of the noxa upon the tissues.

The most constantly observed, secondary

local infection in pharyngeal diphtheria is that of the lymphatics behind the jaw, and the superficial glands of the neck. These are often highly inflamed and much swollen.

In laryngeal diphtheria the swelling of the superficial glands is usually absent, since the lymphatics of the larynx are more deeply situated, and swelling of them often escapes notice.

Haemorrhages are common in the various organs, and from serous surfaces. The heart muscle and voluntary muscles undergo fatty changes. Waxy degeneration has also been observed.

In the kidneys, even in the lighter cases, there is cloudy swelling of the epithelium. In severe cases there is frequently glomerulo-nephritis, haemorrhage, extensive degeneration of the epithelium in the convoluted tubes, and sometimes diffuse nephritis. The spleen is hyperemic, the malpighian bodies often enlarged, as are the lymphatics of the body generally. In the mucous membrane of the alimentary canal the lymph follicles are often swollen; sometimes there is superficial ulceration. In the liver there is a more or less degree of fatty degeneration. Diphtheritic inflammation of the stomach seldom occurs, and then confined to the cardiac portion. In the brain and cord meningeal and parenchymatous haemorrhages sometimes occur.

Klebs has found accumulations of micro-organisms in the perivascular lymph spaces of the brain, and Dejerine has found accumulations of white and red blood-corpuscles similarly situated in the spinal cord.

In three cases of extensive diphtheritic paralysis he found advanced degeneration of the nerve fibres of the anterior root, and degeneration of the ganglion cells in the anterior horns.

In most of the cases of paralysis the disturbance is referable to degenerative changes in the peripheral nerves.

DR. D. R. BROWER read a paper entitled
NERVOUS SEQUELÆ OF DIPHTHERIA.

The morbid phenomena left by diphthe-

ria in the nervous system are paralysis of motion and sensation, chorea, epilepsy, and insanity. These sequelæ occur more frequently in this disease than in all the other acute diseases combined, and they are always in the way of a favorable prognosis, for at least six weeks, no matter how mild the primary disease may have been.

Paralysis occurs in about forty per cent. of all the cases treated. It may commence as early as the second day of the diphtheria, but usually does not appear until the second or third week after the termination of the throat symptoms. This paralysis bears no direct relation, as to time of development or intensity, to the severity of the primary disease, or the previous health of the individual. A very mild case may be followed by the severest paralysis. It is much more frequent in adults; indeed, the older the patient the greater the danger; although it may occur at any time from two years upward.

The paralysis usually begins in the velum palati, the place of the primary morbid activities, being the place of the beginning of the nervous sequelæ. This produces a nasal tone in the voice, and a partial regurgitation of liquids through the nose during deglutition, and along with this motor impairment there is ordinarily anaesthesia. Paralysis of the pharynx is not so frequent as paralysis of the palate, but more dangerous, and it may be so severe as to make swallowing impossible. The superior laryngeal nerve may be paralyzed, producing anaesthesia of the mucous membrane of the larynx, and destroying, in part, the functions of the epiglottis; so that food is very liable to enter the larynx and trachea. If the particles are small they may reach the bronchi, causing pneumonia; if large, they may occlude the trachea and produce sudden death. The paralysis may also include the vocal cords, making phonation impossible, and so far interfering with respiration as to make intubation or tracheotomy necessary.

Paralysis of the accommodation of the eye, due to paralysis of the ciliary muscle, may occur, and will be overcome by the use of convex glasses. The motor-occuli nerve may also be paralyzed, producing diplopia, strabismus and ptosis.

Paralysis of the lower limbs may succeed that of the soft palate. The patient will first complain of numbness, formication, tingling and pain, and then, very soon, muscular weakness will be manifested. The loss of power is rarely complete, the condition being more a paresis than a paralysis, and with it there is usually ataxia. The case may at this time easily be mistaken for locomotor ataxia, especially when, as is usual, you find absence of patella tendon reflex. This ataxia will continue often for weeks after all paresis has disappeared. If the paralysis continues to advance, the upper extremities may next be involved, and here, as in the lower extremities, disorders of sensation usually precede those of motion—and ataxia is usually present here also.

The muscles of the trunk and neck, and the sphincters of rectum and bladder, may, later along, be paralyzed, although very rarely.

The diaphragm and heart are sometimes involved; the former, while grave, is not so serious as the latter. Heart failure is a cause of death in many of the malignant cases in the primary disease, but sudden death not infrequently occurs from this cause, after convalescence has been well established. This fatal accident is sometimes preceded by praecordial distress, dyspnoea, slowness and irregularity of pulse, and badly accentuated heart sounds.

The earliest, most frequent and most persistent phenomenon of perverted nervous action, is the loss of patella tendon reflex. This may occur very early in the primary disease, but usually does not occur until the second week, and may continue several weeks after otherwise complete recovery.

The pathological anatomy of post-diphtheritic paralysis is yet uncertain. In some cases the lesion is without doubt a peripheral parenchymatous neuritis, in other cases the paralysis depends upon a poliomyleitis anterior; and more rarely cerebral haemorrhage or meningitis is found as the pathological basis of the symptoms. These several lesions can not be present in the majority of cases, for the paralysis is often too transitory in its duration and too variable in its location, to be due to any fixed structural change in the tissue of the nervous system. The micro-organisms that constitute the materies morbi of the primary disease are the causes of this phenomena. Either directly by their presence in the nerve elements of the central or peripheral systems—or in the blood-vessels that supply them, or else they produce some poisonous products the more or less sudden development of which destroys or disturbs the functions of the nervous system.

The prognosis of the paralysis is favorable except it involves the muscles of deglutition, respiration or the heart. The sooner the paralysis occurs, the more unfavorable the prognosis. The duration of the sequælae is very variable.

The treatment of post-diphtheria paralysis must be tonic and mildly alterative, an abundance of easily digested nourishment, a moderate amount of alcoholic stimulants, and when there is paralysis of pharynx, epiglottis or upper part of the larynx, the early use of an esophageal tube is demanded, as well as feeding by the rectum.

Strychnia should be used with some caution in the beginning of the paralysis lest by producing an undue determination of blood to the spinal cord we increase the pathological conditions. Iron and quinine will usually be of service from the beginning.

Mild alteratives, the iodides and mercury are indicated in the majority of cases, along

with the tonics, to stimulate the absorbents, and thereby hasten the removal of morbid products from the nervous system.

Electricity in the form of the *mildest* current that will produce muscular contraction is of service. In some cases the faradic current is sufficient, but more frequently the interrupted galvanic current is necessary for this purpose.

Massage will be of service if the paralyzed muscles are accessible to the manipulations.

DR. A. H. FOSTER read a paper entitled
THERAPEUTICS OF DIPHTHERIA.

Clinically we meet two varieties, the fibrous and the putrid. Generally the fibrous has no odor, or, if any, only a faint sour-milk smell, until fatal exhaustion and sepsis have supervened. When this occurs in the fauces or larynx, and is seen early, mercury, in frequent liberal doses, is my main reliance. The system in diphtheria, as in syphilis, seems very tolerant of mercury until an impression is made; then dosage by it must be guarded. While giving the mercury add nourishment and stimulants, such as whisky, and quinine by injection, if not borne by the stomach.

Bind turpentine and camphorated oil, equal parts, freely about the neck. Keep a large dish of hot water steaming beside the bed, with turpentine constantly floating and vaporizing upon it, using eucalyptus oil with it if desired. Keep lime water with benzoate of soda in solution, by means of an atomizer, steaming into the patient's face constantly, keeping the room of uniformly rather high temperature.

Very little confidence is placed in topical applications for the fibrous forms. Papoid 2*i* to 3*i* glycerine is brushed on every hour; a brush moistened in glycerine and rolled in sulphur is applied often, or sulphurous acid and glycerine—equal parts.

Three cases this season of laryngeal form, in imminent peril, and the surgeon in waiting, have recovered under the above

treatment with the aid of bountiful additional warm vapor in the room.

Of course perfect quiet in bed for days or weeks following the disappearance of the exudation is enjoined, with a judicious administration of bitter and ferruginous tonics.

In the putrid form, with or without nasal complications—in patients not too young—a $\frac{1}{4000}$ to $\frac{1}{8000}$ solution of the bichloride of mercury is injected through the nose into the throat every six to twelve hours, to cleanse that part of the fauces not reached by the mouth.

By way of the mouth the fauces are mopped with a stronger solution of the bichloride at the same time. The tincture of iron and chlorate of potass. solution is used as liberally as the stomach will allow. The disinfecting turpentine vapor is kept constantly forming, often from a large basin resting in a notched piece of stove-pipe, over a kerosene lamp. The lime-water spray is used as freely as possible. The turpentine and oil is kept upon the neck, and with flaxseed poultices, if the glands are much involved.

The following is from Dr. J. W. Tope, of Oak Park, Ill.:

"Dear Dr. Foster: Yours of to day just at hand. In reply I will state briefly my line of treatment. If I see the case early —within the first twenty-four hours—I generally put the patient on large doses of sodium benz., giving it every hour or two for twenty-four, sometimes forty-eight hours. At the first appearance of deposit either on tonsils or elsewhere, I order a sat. solution of acid. borici to be used as a gargle, also to be thrown into each nostril (warm) with syringe every hour or two, according to the urgency of the case. I also apply to every diphtheritic patch in reach the bichloride solution, one to one hundred in alcohol every hour or two, taking care to squeeze out of the cotton (I use absorbent cotton) all superfluous solution so that the patient may not swallow it. I use the

boracic acid solution in all cases, because I think that what appears to be diphtheritic deposit only on fauces or tonsils, in many cases, does extend behind the soft palate. Generally after using the sodium benz. for a day or two, I put the patient on large doses of iron. Generally now use whisky liberally—as soon as the least indication of the larynx becoming involved I begin the use of mercury. Generally use the bichloride. When giving benz. sod. use from ten to thirty grains, according to age. In putrid cases, if patient is old enough to keep the injection from being swallowed, I use an injection through the nostrils of one to 4,000 of bichloride of mercury every eight hours. I do not use turpentine, but eucalypt. in vapor. When I use iron I have it given largely diluted, and with a wooden spoon. Use the one to 100 bichloride in alcohol only with swab."

DR. E. FLETCHER INGALS: I have been asked to speak upon the subject of intubation as compared with tracheotomy for the relief of diphtheritic laryngitis. I have recently found, in looking over the literature, that O'Dwyer's method has steadily gained ground with the profession in this country during the last year. Numerous papers have appeared, showing that many physicians are adopting this method, and I think we may say, without hesitation, that it has reached the point where it may be termed a recognized procedure. In Europe the status of intubation is now about the same that it was in this country two years ago, but the reason for this does not seem to be found either in the operation or in its results.

Many experiments have been made with a view to improving this operation, but so far as I can learn the majority of operators have concluded that O'Dwyer's methods and instruments have not been improved. There appeared, during the past year, a short but interesting article, by Dr. James Rich, of London, on "Naso-Pharyngeal Intubation," in which he recommends the

passing of a catheter through the nostril and nares into the larynx, and retaining it in that position so long as necessary for respiration. He recommends, at the same time, the passing of a small oesophageal tube through the other nostril into the stomach, for the purpose of feeding the patient. He had tried the method on four cases. It worked very satisfactorily for a few days, but unfortunately none of his cases recovered. This is not new, but is of interest as showing the efforts being made to improve the operation.

The operation of intubation, as we understand it, or O'Dwyer's method, seems to be especially adapted to those cases which can not be well cared for by nurses or physicians. This is exactly contrary to the suggestion of some foreign physicians, who urge as one of the greatest objections to this measure that the physician or nurse must be constantly in attendance, capable of introducing the tube. The experience of physicians in this country indicates that the laryngeal tube does not require as much attention as the tracheotomy tube, and that when expelled by cough there is nearly always ample time to summon the physician to reintroduce it.

Some one has specially recommended intubation in cases which occur with epidemics of measles, as in these cases tracheotomy is seldom or never successful. It is in these cases, particularly, that considerable ulceration of the larynx, or the trachea, has been set up by the tube and intubation has not proved very efficacious.

I think it is well established that intubation is to be preferred to tracheotomy in very young children. It has also been recommended for adults, whom it has been stated never recover when tracheotomized for diphtheria. I can not vouch for the correctness of this statement. One of the most prominent dangers of this operation is that of crowding membrane down before the tube, and thus preventing respiration. However, this is not a very frequent

accident. O'Dwyer says that out of 200 cases he has only had the accident occur twice, and in these two cases, on withdrawal of the tube, the membrane was immediately coughed up. This has been the experience of some others. But in some cases the membrane will not be coughed out. In such a case I believe we should do tracheotomy immediately.

In this I am not in accord with my friend Dr. Waxham, who recommends trying to remove the false membrane with forceps. The length of time the tube may remain in the larynx should be considered when comparing this operation with tracheotomy, as it has been thought by some that the laryngeal tube could not be left long enough to accomplish the results desired. There is no difficulty from this source, as it has been found that the tube may be left as long as necessary, without causing complications, excepting those cases complicating measles, in which limited ulceration is liable to occur. The tube will generally remain from three to five or six days, but it is often coughed out the third or fourth day, and in many instances it is not necessary to return it; but in others it must be reintroduced and worn until the fifth or sixth day before it can be finally removed, and a few will have to wear it even longer.

It has been urged against intubation that particles of food find their way into the trachea and then into the lungs, causing pneumonia by aspiration, or "*Schluck-pneumonie*." I think it a common belief with the profession that this is the usual cause of pneumonia after intubation. I have held this view myself, and still hold it with reference to some cases, but it is a singular thing that in 116 autopsies recorded by Dr. Northrup, of New York, not a particle of food could be found in any portion of the respiratory tract. This would seem to prove the danger of pneumonia by aspiration has been much overestimated. The risk of tubes slipping into the trachea has been urged against intuba-

tion, and I think it is a danger that has been much underestimated by the profession. Several instances in which this accident has happened have been published; I know of some cases that have not been reported, and have no doubt that others have occurred. This danger can only be avoided by using a tube of proper size. Those who are in favor of tubes with small heads do not consider this danger of much importance, but I would urge upon you the necessity of using tubes of proper size with the large head recommended by O'Dwyer. It was urged early in the history of intubation that the tubes were liable to become stopped up, and might cause suffocation before they could be removed. This accident is rare but it may occur slowly by drying of the secretions or suddenly by loosened membrane. One case is reported in which the child vomited and portions of the contents of the stomach were drawn into the tube so that the patient would have suffocated if the physician had not been present. If the tube becomes occluded slowly the gradually increasing dyspnoea will attract the nurse's attention so that the physician may be called to remove it, but if it becomes stopped quickly the only chance for the patient is in coughing it out, therefore a tube which does not fit tightly should be used. Until recently we all believed that a child three or four years of age could not breathe through a tube less than one-fourth of an inch in diameter, but we have found that this impression was erroneous, and that they may get sufficient air through an opening not more than one-third of the size. It is claimed by O'Dwyer that the small openings are better than the large ones, because patients wearing such tubes can cough more forcibly, and expectorate more readily.

A tube which will slip into the larynx without much force should be used in preference to one which has to be crowded into the glottis. It is especially important that the physician should remember that

the tube merely allows the entrance of air, and has nothing whatever to do in curing the patient. I believe that in many instances the physician gives up his work as soon as the operation has been done, and does not continue proper medication. During the past year the discovery of the new method of feeding, which was presented to this society by Dr. Casselberry (and which I think he says was suggested by Dr. Cary), has done very much to remove from intubation one of its most prominent objections. Before this method of administering fluid was discovered it was necessary either to feed the child solids or soft solids, or to nourish it by enemas, and to withhold fluids. By this method we find that the child placed upon its back, with the head low, can swallow fluids readily without the danger of its running into the trachea and causing cough and possibly pneumonia. I believe that with the adoption of this method of feeding, the operation will soon become much more general than it now is, and as it becomes more general I think we will find that the results are better than they have been.

In the spring of 1887, I gathered together the reports of 514 cases of intubation, in which the percentage of recoveries was 26.07 per cent. Dr. Waxham gathered together for the International Medical Congress, in the fall of the same year, the records of 1,072 cases, with a percentage of recoveries of 26.77, showing in that short space of time a considerable improvement in the percentage of recoveries. Dr. O'Dwyer reported a series of 100 cases, with a percentage of 27 recoveries. And the latest written report from Dr. Waxham is 169 cases with 29 percentage of recoveries.

The percentage from tracheotomy varies according to different reports. Where large numbers have been collected it is from 26.25 to 28, thus showing that the percentage of recoveries from the two operations is essentially the same. There are in-

stances in which the percentage of recoveries from tracheotomy has been much less, as there are those in which the percentage of recoveries from intubation has been equally unfavorable, but there are others in which results have been much better. Some operators have had nearly 50 per cent. of their cases recover after tracheotomy; but the most comprehensive statistics place the recoveries from this operation fairly, at from 26.25 to 28 per cent., and the largest collection of cases of intubation place its successes at 26.77 per cent. I do not believe intubation adapted for all cases, but I do believe it should be used in preference to tracheotomy in nearly every case in the beginning. If it does not relieve the dyspnoea, tracheotomy should be resorted to. Of course intubation should not be used where the obstruction to respiration is in the fauces instead of the larynx, as occasionally happens.

DR. F. E. WAXHAM: In looking over the records of my cases to-day I find I have performed intubation 180 times, with 56 recoveries, or something over 31 per cent. My first 150 cases were reported before the American Medical Association, and have been fully published. Since then, within the last six months, I have had 30 cases, with 15 recoveries, or 50 per cent., and I believe that the skill and the judgment that comes with increased experience will enable us to continue to save at least 50 per cent. of our cases. In looking over the records I find that many cases have been saved only by the most judicious and watchful care, and, again, I find that a few cases have been lost where, if better judgment had been exercised, I am sure the patients might have recovered. For example, not long since I performed the operation on a little boy 12 years old. It was so perfectly evident that there was membrane below the tube that a thread was left attached to it in order that the parents might remove the tube at a moment's notice, in case there was detachment below the tube. All went

well for two days, when the child accidentally severed the string by chewing upon it, and, about two hours later, detachment of membrane occurred, and the child died in a few moments. In this case, if the tube had been removed at the moment or soon after the thread was severed, undoubtedly the child would have recovered. The membrane would have been expelled, or, if not, a smaller tube should have been introduced, and this would have been expelled when the membrane became detached below it, or, as Dr. Ingals suggests, tracheotomy should have been performed. Dr. Jacobi, of New York, than whom we have no better authority, after having performed tracheotomy 500 times, now recommends intubation. Such is the conclusion of a man who, perhaps, has performed tracheotomy more times than any one else in America. In the last issue of the *Journal of Pediatrics*, Dr. Huber, of New York, reports 94 cases, with 37 recoveries, or 44 per cent.; so it seems that the record of intubation is improving.

In regard to feeding the patients, a great deal of judgment and discretion should be used in every case. We must find the idiosyncrasies of each patient. Many patients will not swallow in the inclined position; we cannot induce them, we cannot compel them to swallow while standing on their heads; and when this is true we must remove the tube and employ one with an artificial epiglottis, or else continue to use semi-solid food. It should be said, however, that perhaps the majority of patients swallow very well in the inclined position. Again, there is one danger that should be referred to in this connection; that is the danger of expulsion of the tube while in this position. Not long ago I had a little patient two years old, who was doing remarkably well. On the second day, while he was being fed in the inclined position, there was a sudden coughing spell, and soon after the people noticed that the child was breathing hard. They postponed sending for me for some little

time, and when they did finally send, it was too late; the child was dead before I arrived. Upon examining the child, in the endeavor to remove the tube, I found it was not in the larynx, and upon searching it was found in the post nasal space. The tube had slipped down while the child was in the inclined position. This accident will not frequently occur, but it is a danger we must bear in mind. I think my success has been dependent, in no small degree, upon the use of small tubes. I invariably use a smaller tube than is appropriate for the age of the child. One of the greatest dangers is from the detachment of membrane below the tube, and I believe the fault with many who have no success with intubation is that they use too large a tube, one that fits too tightly. When detachment of membrane occurs the tube is not expelled, and suffocation quickly follows. Frequently I am called to patients to replace a tube that has been ejected, and I would much prefer to replace the tube several times than to take the risk of sudden suffocation.

DR. W. E. CASSELBERRY: I feel that in this connection still a word is necessary, although it has already been mentioned by Dr. Ingals, in reference to the crowding down of the membrane in the performance of intubation. This, in my experience, has been a more frequent accident than we would be led to suppose from statistics already given. Thrice it has happened to me; twice I have been able to perform immediate tracheotomy supervening the intubation, to relieve the condition, and once saw death rapidly ensue, more rapidly than it otherwise would have done, when tracheotomy was refused by the friends. In a certain orphan asylum in this city, up to three years ago, tracheotomies had been performed, and death resulted in every instance. The management of that asylum thereupon resolved that no more operating in these cases would be permitted, and, as they expressed it, the patients would be

allowed to die in peace. With the advent of intubation and the recent recurrence of cases of diphtheria in the institution, I was requested to perform this operation. The child was eight years of age; it was in all respects, to begin with, what would be regarded as a favorable case for tracheotomy. It was in the last stages of dyspnea from laryngeal diphtheria. The introduction of the tube, under these circumstances, crowded the membrane down, and death was very rapidly imminent, so that hasty action was necessarily taken. The authorities of the institution had to be consulted before tracheotomy could be done; they finally agreed, after consultation with the mother of the child, that tracheotomy would be permitted. By that time the child had ceased respiration completely—was dead, although not more than ten minutes had elapsed from the performance of intubation. The child was hastily placed upon the table, and a tracheotomy tube inserted. The child was resuscitated, and finally recovered. I mention this case simply to urge the necessity, on the part of the physician when performing intubation, to have it thoroughly understood that tracheotomy may be immediately necessary to supplement the operation of intubation, and to have the instruments and table all ready to perform instantaneous tracheotomy in case the membrane is crowded down ahead of the tube.

DR. FRANK BILLINGS: I would like to ask a question of Dr. Ingals or Dr. Casselberry. When Dr. Casselberry made known his method of feeding, he only described one form of inclining the patient—the head backward on an inclined plane, and like Dr. Waxham, I found some difficulty in feeding two recent patients in that way; but by turning them over on the abdomen with the head on an inclined plane, they took the food just as well. I would like to know if that method has been tried.

DR. W. E. CASSELBERRY: I would simply mention that I have tried both methods.

The one originally described was on the back. Following my publication and description of this method of feeding in the inclined plane position in cases of intubation, I received a letter from Dr. John Bartlett, who suggested feeding upon the abdomen in the inclined plane position. I had already, at that time, tried this method in one of the patients I was feeding on the back, but it did not seem to me to work as well as the dorsal position. Since then I have tried it and it seems to work equally well with the dorsal position. I think it is a matter of suitability to the individual case, whether the child should be inclined on the abdomen or on the back.

DR. W. F. COLEMAN: I would like to ask a question on the pathology of post-diphtheritic paralysis about the eye, which has interested and puzzled me much. The paralysis of the external ocular muscles is said not to exist after diphtheria, but in my own observation it does exist. It is rare to have paralysis of accommodation without dilatation of the pupil, except in diphtheria. On the other hand, paralysis of the sphincter of the iris is commonly accompanied by paralysis of accommodation. Why we should have paralysis of the accommodation without paralysis of the sphincter is to me a query, and one I am not able to give an opinion upon. It would seem a very singular thing that diphtheria should select the ciliary nerves, which come from a very small ganglion to the ciliary muscle, and not attack the branches to the iris. As to the time: It appears that paralysis occurs usually within three to six weeks after the disease. And it occurs in very mild cases of diphtheria. As to the age, my observation is that a good many cases occur in young persons.

DR. D. R. BROWER: I do not know that I have anything to say in reply to the inquiry of Dr. Coleman, except to reiterate the statement that the pathology of post-diphtheritic paralysis is yet uncertain. We cannot explain these cases by any of the

ordinary pathological conditions that give rise to paralysis. In the case the Doctor has mentioned, of accommodation paralysis, there must be something more than the neuritis that is considered the basis of most cases. It must be there is something developed by these micro-organisms, which plays havoc with the nervous system.

DR. E. J. DOERING: I would like to ask Dr. Ingals to compare the statistics of tracheotomy and intubation. Is it really fair to compare the two? Can the Doctor give us the statistics of twenty suffering from diphtheria, in which tracheotomy has been performed, and twenty of intubation? Such statistics would be more valuable for comparison than merely so many of intubation and so many of tracheotomy.

DR. JOHN W. NILES: I understand Dr. Ingals to say that tracheotomy in adults, after diphtheria, was uniformly fatal. I simply want to report that Dr. C. T. Parkes performed a tracheotomy on a friend of mine who recovered.

DR. E. F. INGALS: With reference to Dr. Doering's question, I may say there is no fair comparison of intubation and tracheotomy, and there is no way to make a fair comparison until statistics from the new operation are much larger. We cannot know about the relation of cases in either instance, but we may make as fair comparison by taking the whole number of cases as in any other way. Some surgeons, who have had great success in tracheotomy, have advised this operation as soon as they noticed difficulty in breathing; some who have had success in intubation have done the same. Either operation performed early will be much more successful than if performed late. Either operation performed early will get the credit of saving patients who would have lived without it. There is no question in my mind but that the operation should be done early, and if tracheotomy is done as early as intubation, I presume the results will be much the same.

DR. W. G. DYAS: When I first came to this city in 1859, diphtheria was very prevalent; twenty-one children died in immediate succession. These children were all under the mercurial treatment, and then for the first time, did I use the iron treatment. I use very largely the perchloride of iron. I gave large doses of iron internally, and large doses of wine as stimulants. There is no disease in which stimulants are so well borne as in diphtheria. The result was a good deal of success after a great deal of mortality from the disease. Some men were opposed to the use of tonic treatment, and would insist on going on with calomel in large doses. I think it was in 1859 or 1860 that I was called to Lyons, in consultation with Dr. Fox. On the way there I saw a child lying dead. It had recovered to a certain extent from diphtheria, was dressed and walking about, and every one supposed it had recovered from the disease; when suddenly it was seized with paralysis of the heart. In that case paralysis set in sooner than it generally does in this disease. I saw Dr. Fox, and to his credit be it said, he had no thought of anything but saving his patients. I proposed the iron treatment and stimulant and he said, "Do what you please, I am satisfied to see my patients recover." They were two German children, and are now young ladies, living in this city not far from my house. In their cases we used the perchloride of iron with equal parts of glycerine, applied internally to the fauces, and at the same time used muriate tincture of iron in ten minim drops every three hours. Wine was given in large quantities, and I was surprised to see children so young able to bear such large quantities of wine. I have treated as much diphtheria as most men in this city, and have had a great deal of success. I have scarcely changed my practice. One case I attended with a friend of mine was unsuccessful. In that case we did all that could be done from the beginning; injec-

tions of lime-water were made along the nostrils; lime-juice gargles were used, and large quantities of stimulants were given, but we had a very unruly child to deal with and it died; not from the treatment nor the disease, but from obstinacy. He died from paralysis of the heart. That was the only case that has been unsuccessful with me that I attended from the commencement. We now use carbolic acid vapor in the room and lime-water injections along the nostrils, and I have very few cases that terminate in affections of the larynx and trachea. I have been most fortunate in this respect. I cannot say one word about intubation or tracheotomy, for my cases have not gone so far. I can help them by decisive action in the beginning, and thus a majority of the cases will recover.

DR. EPHRAIM INGALS: I have found nothing better in the treatment of diphtheria than to adhere to the old simple methods, and in therapeutics I still place my chief reliance on the tincture of chloride of iron, quinine, and chlorate of potassium. If the sick will hold the compressed tablets of the chlorate in the mouth and allow them to dissolve slowly—as they will—the remedy will be more efficacious than when prescribed in solution. Twenty to thirty grains should be administered daily in this way. Beyond what influence the agent may exert through the blood, this method gives it a long, continued application to the throat.

When patients are old enough to do it, they are benefited by frequent cleansing of the throat with gargles of warm water. I would isolate the sick when practicable. The importance of abundant and pure air, an even, and not too low temperature, good nutrition and caution during convalescence, is inculcated by all alike.

DR. G. F. LYDSTON: There is one point in connection with catarrhal diphtheria that I think was not brought out as strongly as it should have been; that is, that

some of the apparently mild cases are apt to be neglected, their importance underrated, and the patient allowed to go about too soon, as a consequence of which fatal, cardiac paralysis or other disagreeable consequences may ensue. A case illustrating this came under my observation in a prominent young business man in this city, who had a very slight attack of catarrhal diphtheria; in fact it was pronounced by one gentleman who saw him to be ordinary follicular pharyngitis. He was confined to the house about three days and then dismissed under the supposition that he was entirely well. He had previously been a perfectly healthy man, and, as was his custom prior to his illness, he took a cold bath before going down to business, and was found in the bath-room half an hour later dead, probably from paralysis of the heart. I think that case illustrates the care that should be taken in differentiating catarrhal diphtheria from simple sore throat. All cases that can not be accurately diagnosed, as well as cases that can be traced directly to infection, should be carefully watched.

Dr. Brower, in mentioning the various nervous sequelæ of diphtheria, failed to mention a peculiar symptom I have seen in two cases, viz.: paralysis of the bowels, although this may have been embraced in his remarks upon the effects of diphtheria on the spinal cord. I have seen two cases in young children. In one case in the third week, in the other the sixth week, I was called suddenly to see the little patients. I found the abdomen in each instance tremendously swollen. I have never seen cases of tympanites as marked as were these. The condition was associated with most obstinate constipation, and in each case with paraplegia. I ventured the opinion that the abdominal distention would disappear, as the other nervous symptoms improved, and my prediction proved correct—the condition disappearing in four or five weeks.

DR. E. F. INGALS: I want to say one

word with reference to instructing the community how to prevent diphtheria. I believe diphtheria is contagious, although there are many cases in which it does not seem to be so. I firmly believe that a great majority, perhaps more than half the cases of diphtheria, are caused by negligence of parents or friends about keeping the house properly warmed. A majority of the cases of diphtheria occur in mild weather, when it is a little too cold to be without fire, and a little too warm with it. As a result, many houses will be found at about 65°, and we will find the little ones running about, in and out of doors, dressed in their summer clothing. They necessarily take cold; they contract sore throat, and, with or without the bacillus as a cause, diphtheria is developed, whereas, if they were properly clothed, and the house was kept properly warmed, they would not have the disease.

I think the local treatment is not always as important as is thought by some physicians. It is well enough if it can be done without getting into a quarrel with the child. I recollect very well what Dr. Dyas told me, a few years ago, of his experience with the local treatment of diphtheria. The case was something like this: The child had diphtheria; the doctor believed in local treatment, and the father said we will apply it. The child died in the struggle, and I understood the Doctor that he has since given up local treatment unless the child accepts it willingly.

I believe that the tincture of the chloride of iron is one of our best internal remedies, and it may be given so frequently that a good local application is made every half hour, or less frequently, without resort to swabs, brushes, or sprays.

In regard to fatal cases, in which both intubation and tracheotomy have been performed, I am asked whether the result is charged to tracheotomy or intubation? I have no doubt they are charged to intubation by the tracheotomists, and to tracheotomy by the intubationists. Prof. Tirsch,

of Liepzig, has performed intubation thirty-two times with only three recoveries. In fourteen of these cases he subsequently did tracheotomy, but the children died, and therefore, we are told, he abandoned intubation (because the children died in spite of tracheotomy). Would it not have been just as reasonable to abandon tracheotomy?

DR. A. H. FOSTER: I invariably use chlorate of potash with the tincture of iron. In cases of the croupous form only, am I accustomed to give mercury; in the other forms of diphtheria I try to saturate the patient with tincture of iron and chlorate of potash solution.

THE GYNAECOLOGICAL AND OBSTETRICAL SOCIETY OF BALTIMORE.

Stated Meeting held January 8, 1889.

THE PRESIDENT, DR. THOS. OPIE, IN THE CHAIR.

DR. WM. E. MOSELEY reported a case of SUPPURATING PAR-OVARIAN CYST.

Had this been a case of simple parovarian cyst, I should not have considered it worthy of a special report, but in general particulars the case is exceptional. In the first place it occurred in a mulatto woman, such growths being extremely rare in the colored race. Secondly, it was a *suppurating* par-ovarian cyst, and thirdly it had ulcerated through into the left Fallopian tube and so discharged some of its contents through the uterus. Mrs. T., a mulatto woman, presented herself at my private dispensary on the third of last October (1888). She was about thirty-five years of age, had been married seventeen years, but had never been pregnant. Up to last July her menstrual history had been perfectly normal. Three or four years before, she first noticed a slight tumefaction of her abdomen, which increased and diminished by turn, but gave her no particular discomfort, and apparently had no marked effect upon her general health.

In July, 1888, her menstrual flow appeared as usual, but did not again appear up to the time of her consulting me. Co-incident with the cessation of her menstrual flow the tumor in her abdomen began increasing in size, and her general strength failed.

Examination showed the following condition: The abdomen contained a tense, perfectly smooth, elastic tumor, reaching from the pubis to about half way between the umbilicus and ensiform cartilage. It was uniformly flat on percussion except in either flank. Fluctuation was very marked in all directions, and the abdominal wall seemed to be freely movable over the surface of the growth. Changes of position made no change in the above signs. Abdominal measurements at this time were as follows: Circumference at umbilicus $30\frac{1}{4}$ inches, pubis to umbilicus $6\frac{1}{2}$ inches and ensiform cartilage to umbilicus $8\frac{1}{2}$ inches. Digital examination showed apparently a small uterus, which was flattened up against the pubis, with no other sign of uterine disease. Fluctuation could not be made out in the vagina. The woman's general condition was bad. She was very anæmic and weak, appetite poor and bowels constipated. I determined to watch her for a time, to build her up as much as possible, and to act in accordance with future developments, feeling certain that she could not well be in a worse condition for operation, and could probably be gotten into a better one.

She had suffered much from malarial troubles, and was put upon arsenic, iron and quinine, with good food and rest in bed. Her abdominal measurements during the following two months changed but very slightly. Her temperature varied between 100° and 102° in the axilla, and her pulse ranged from 90 to 100 beats per minute. But her general condition did improve very markedly.

On November 13th, I measured the depth of her uterine canal, and found it

24 inches. At no time was there any cough or lung symptom. Taking all the facts into consideration, I felt that the most probable diagnosis was a tense, rather thick-walled monolocular cyst of the left ovary, and Dr. T. A. Ashby, who kindly saw her in consultation with me soon after this, reached the same result. The persistent high temperature, admitting that the diagnosis was correct, of course pointed in the direction of suppuration.

On December 5th, after the abdominal walls had been scrubbed with 1-2000 solution of bichloride of mercury, with the patient under ether, administered by Dr. Keyser and assisted by Drs. Ashby, Platt and Robert Johnston, I made the usual incision, a trifle less than two inches in length. No abdominal adhesions were found. Upon puncturing the cyst, a free flow of foul-smelling pus occurred and a little over a gallon was drawn off. Although some flowed down over the abdominal wound, this was kept so tightly closed by tension upon the sack, that I am satisfied none entered the abdominal cavity. There was a considerable adhesion to the omentum, which was ligated and cut. Great difficulty was found in separating the tumor from the uterine adhesions, which were unusually firm and extended well over to the right broad ligament and tube. All adhesions were tied with carbolized catgut and all bleeding vessels controlled in the same manner. The pedicle proved to be the whole length of the left broad ligament. This being so large and containing some large size vessels, was tied with carbolized Chinese silk, the stump thoroughly seared with a Paquelin knife at a little more than a black heat and dropped back into the abdominal cavity. The abdomen was thoroughly washed out with warm boiled water, cautiously dried and the wound closed with seven carbolized silk sutures. The external dressing consisted of a piece of muslin upon which had been spread a considerable layer of antiseptic

ointment (consisting of one grain of mercurial bichloride rubbed up in an ounce of benz. oxide of zinc ointment), upon this a piece of oiled silk, to prevent the gauze from coming in contact with the adhesive plaster, enough absorbent cotton, which had been freely baked, to fill up the depression between the prominent iliac bones and a cotton binder. Then the patient was put into bed, between woolen blankets, and artificial heat applied.

The time consumed was about one hour and a half, most of it having been occupied in separating the tumor from its adhesion. The patient rallied well from the ether, vomited but once and showed no sign of extreme shock.

Four hours after the operation, my patient had a temperature of 98.2° in the axilla, and a full, smooth pulse of 83. The only anodyne given was one subcutaneous injection of a quarter of a grain of morphia. She took a cup of black coffee in teaspoonful doses, and as her stomach was undisturbed by it, was ordered milk in teaspoonful doses every half hour; this was gradually increased, and at the end of forty-eight hours, she was given beef tea (home-made beef tea and a teaspoonful of beef peptonoids to each cup full). The highest temperature reached was 101.5°, on the evening of the second day. The pulse was abnormally slow and was accompanied by a rather scanty secretion of urine. Infusion of digitalis failed to cause improvement in this respect, but the flow promptly increased upon the free use of Lythia water and the pulse became normal. The bowels moved naturally on the third day, causing no pain. On the fourth day menstruation appeared, the first time for five months.

Three of the abdominal sutures were removed on the eighth day when union was perfect. The remaining sutures were removed on the fourteenth day.

On the sixteenth day the temperature suddenly went up to 102.1° in axilla, the rise evidently of malarial origin. Nine

grains of quinine sulphate, in divided doses inside of six hours, reduced the temperature to normal, where it remained.

The examination of the cyst was kindly made by Prof. Wm. H. Welch, of the Johns Hopkins University, and his report was as follows:

Examination of tumor removed by Dr. Moseley.—The specimen is a unilocular cyst, has a glistening, grayish-white appearance, and presents numerous shreds of tissue, consisting of adherent bits of omentum and fibrous tissue. In the pedicle is included the abdominal extremity of the Fallopian tube, which measures thirteen ctm. in length. The Fallopian tube is intimately incorporated with the wall of the cyst, its fimbriated portion being obliterated. The wall of the tube is considerably thickened, its lumen dilated to about a half ctm. near the pedicle and becoming larger toward its communication with the interior of the cyst. A probe inserted into the tube passes readily into the interior of the cyst, through an opening about one ctm. in diameter, situated on the inner wall of the cyst.

Upon opening the cyst, one-half a liter of reddish gray, somewhat viscid fluid, mixed with dark red and greyish blood clots, escapes.

The diameter of the cyst is 23 ctm. The average thickness of its wall 3 m. This wall is composed of three layers, an inner of a yellowish grey, sloughy appearance; a middle of a gray, dense, fibrous aspect; and an outer corresponding to thickened peritoneum, which can be stripped off.

The inner surface of the cyst is irregular, yellowish, necrotic in appearance. There is an oval, depressed, ulcerated area, eight inches in length and five in breadth around the opening of the Fallopian tube into the cyst.

Upon microscopical examination no epithelium is found lining the cyst, but in its place a mass of pus cells, Gluge's corpuscles and fatty granules.

The fluid contained in the cyst is composed of red blood-corpuscles, pus cells, most of which contain fatty molecules, and many are converted into Gluge's cells, free, fatty granules, and granular detritus without definite character.

Diagnosis.—Par-ovarian cyst, which has suppurated and has ulcerated into Fallopian tube. The unilocular character of the cyst and its intra-ligamentous situation indicate that it is of par-ovarian origin. The epithelial lining has been destroyed by the suppurative process.

The communication with the Fallopian tube is undoubtedly secondary, but it is not possible to say positively whether the ulceration is from the tube into the cyst or in the reverse direction. The extent of the ulcerating cyst around the opening into the tube would suggest that the direction of the ulceration has been from the cyst into the tube.

The free communication between the interior of the cyst and the cavity of the Fallopian tube, which is patent throughout the 13 ctm. of its length removed, would make it possible for the cyst's contents to escape through the uterus and vagina. It would be interesting to learn from the clinical history whether such a discharge of the contents of the cyst ever took place.

After receiving Dr. Welch's report, I carefully questioned the patient regarding any free, purulent discharge from the vagina, and satisfied myself that such had occurred shortly prior to the operation, although nothing had been said to me regarding it at the time of its occurrence, nor was such a discharge present when I made a vaginal examination.

A word regarding the antiseptic ointment that I used in dressing the abdominal wound. I have used it for past two or three years and have put it to several severe tests and it has always answered its purpose exceedingly well.

DR. WM. PAWSON CHUNN said that in the history just presented by Dr. Moseley he

was struck by the fact that amenorrhœa was present in conjunction with swelling of the abdomen. This might give rise to suspicion of pregnancy and lead to maltreatment unless the use of the sound was refrained from. If the tumor was considered to be a par-ovarian cyst, tapping might have been undertaken as has been advised by Spencer Wells, but in this case would have been probably useless, or dangerous, on account of the putrid contents of the sac. Where there is pus in a sac, tapping may let out the contents into the abdominal cavity, or may produce hemorrhage in the cyst, which danger may be avoided by an abdominal incision. The proper plan here was to extirpate the sac. He had recently seen a case in consultation which he diagnosed as a par-ovarian cyst, but which did not turn out so fortunately as Dr. Moseley's case. The patient showed on examination a spherical cyst, with flaccid wall, movable and fluctuating equally in all directions, evidently unilocular in character. Operation was delayed until the attending physician could return to town, but in the meantime the woman fell down stairs and the tumor burst. She passed great quantities of straw-colored urine, and the tumor partially disappeared, but she went on from bad to worse, and finally died, having refused operation.

DR. MOSELEY, in closing, said that in the diagnosis pregnancy had been carefully eliminated. The introduction of the probe was postponed until the case had been under careful observation for nearly two months. When it was used it settled the question beyond any possible doubt. The necessity for antisepsis varies inversely as the cleanliness of the patient's surroundings. When we can secure *pure* air, absolute cleanliness is all that is required, but if the surroundings are bad, antisepsis is an absolute necessity. The treatment of such a case as the one reported cannot be based upon the requirements in a case of simple par-ovarian cyst. The pedicle was

broad and distinct, and moreover contained large vessels, making ligation necessary. Patients, he believed, should, whenever possible, be fed by the stomach. By waiting until the stomach seems settled and then feeding one's way carefully with small doses of milk at regular intervals, no rectal feeding will be found necessary in the majority of cases.

DR. C. O'DONOVAN, JR., reported a case of
RAPID PULSE IN A HYSTERICAL WOMAN.

On November 26th, 1887, I was called hurriedly to see Mrs. S—, white, a widow for about a year, the mother of two children, both dead now. I had known her for the past three years, and had often attended her for various slight ailments more or less complicated by nervousness, that would become sometimes slightly hysterical. About six months ago she complained very much of backache and menorrhagia, which I found by examination, was caused by a retroversion and for which I had introduced a Smith-Hodge pessary, affording her considerable relief; this she was still wearing. She had never been quite herself since the death of her husband, who had consumption, and who required a great deal of nursing, which was freely given by his wife, until his death left her but a shadow of herself, thin, pale, anaemic, constantly harassed by attacks of nervousness, varying in intensity, with each of which she would experience shortness of breath and palpitation of the heart. Her husband had kept a little tobacco shop, and just managed to make enough to keep them going, but when he died the affairs of the shop got into disorder, and financial difficulties were added to her other sources of uneasiness, until she became so despondent and nervous that she could scarcely hold a needle to sew. This chronic state would frequently culminate in paroxysms of such intensity that she would be driven from the house in spite of herself, and would feel obliged to walk and walk, for an hour or more, until she would experience some re-

lief, when she would return home in a state of exhaustion from which she would not recover for a day or more. During several of these attacks she has walked into my office, with quickened, shallow respiration, and pulse-rate about 120, an anxious, frightened countenance; and I had usually succeeded in relieving her by giving a dose of asafetida or valerian, or some such remedy. She had always in her house, by my direction, a number of pills containing a grain each of asafetida and sulphate of iron, which she had been in the habit of taking whenever one of those attacks would occur, and for a week or ten days after its subsidence. These seemed to afford her considerable temporary benefit, but her nervous system had never been able to regain its normal condition, in spite of iron, quinine, strychnia and the various vegetable tonics, which she took at different times. While she continued under treatment and observation, she would get on quite well; she would develop some appetite and could control herself enough to give hope of permanent cure, but as soon as she was left to herself, all of her lately acquired stamina would disappear and she would fall back into her former condition, her hands would become tremulous, her eyes would move restlessly from object to object, her feet would be pushed forward and then drawn back, or would be crossed one over the other for half a minute and then reversed; if sitting in a chair, after a few minutes she would feel obliged to change to another, so that she seemed almost like a child with chorea, except that the movements were deliberate, and lacked that convulsive jerk so characteristic of that disease. In addition to this she would lose her appetite, becoming dyspeptic and constipated. During all this while she could sleep well, passing her only comfortable hours in bed, but spending her days in misery. Her family history, and her own personal history were both good, her mother being alive and

hearty, at about sixty years, and two of her sisters whom I met subsequently were healthy women; there was no suspicion of syphilitic taint. Knowing all these facts I was prepared, when summoned on the night in question, to find her suffering from a recurrence of her nervousness, but for nothing like what I found. She lay in bed, quiet enough, apparently experiencing no pain, which supposition she subsequently confirmed, the only evidence of anything wrong being her hurried, shallow respiration and the intensely anxious expression of her countenance. I had entered the room carelessly, and began to ask her about herself before feeling her pulse, as the evening was cold and I did not care to grasp her wrist with my hand before it had become less numbed. She told me that she had arisen perfectly well, but that something had happened in the morning to precipitate one of her nervous attacks, which she had endeavored to walk off, but had failed, returning worse than when she had started out, suffering principally from shortness of breath and a sense of suffocation; this had become so bad by midday that she was obliged to go to bed, where she had since remained, but without relief.

At this stage of her story I felt her pulse, and was shocked at its extreme feebleness and rapidity. In spite of its fluttering character the impulse wave of each contraction was distinct, and no dirotism interfered, so that I could readily count the beats, which numbered *one hundred and ninety-two* in the minute. This I verified several times, at intervals of five minutes or so, and found these numbers remarkably constant. You may judge my anxiety and fear, so natural under the circumstances. The contractions of the heart muscle seemed fairly strong, and the action of the valves was all right, but the tension in the arteries was almost nothing, so that the blood streamed away from the heart without offering that resistance so necessary to the proper action of any system of valves, and

the woman seemed to be bordering upon syncope that might, at any moment, become fatal from formation of a clot. She lay with her head upon a very soft pillow, so that it was not at all elevated, and had been taking, during the few hours just passed, a weak mixture of brandy and water. While this may have prevented a worse condition of things, it had not much improved them, and it required a very few seconds for me to write for a solution, containing in each half teaspoonful a grain of carbonate of ammonia and five drops of tincture of digitalis, for which I sent at once and anxiously awaited. In my endeavor not to betray my intense anxiety, I overdid myself, and my patient, who had been lying easy and totally unconscious of anything very unusual in her condition, seeing me evidently worried, and, worse than all, trying to dissemble, began to be frightened and uneasy herself, so, more to quiet her than for any other purpose, and to gain time, I placed my thermometer under her tongue very carefully, giving her minute directions about keeping her mouth closed, and ordering her to be sure to retain it beneath her tongue until I removed it. This simple maneuver had the desired effect, and kept her quiet until the medicine arrived. There was not the slightest elevation of temperature. I administered at once ten drops of tincture of digitalis and two grains of carbonate of ammonia, and experienced considerable relief when I found that her pulse began to improve in tone and gradually decreased in frequency; her respirations, at the same time, grew deeper and more satisfactory. After about half an hour I administered half a teaspoonful of the same mixture, affording her much relief. Finding that she continued to improve I left her then, but ordered that the mixture be continued each hour in half teaspoonful doses until she fell asleep.

November 27th. When called the next morning I found her in bed still, but feeling very much more comfortable, although

she was worn out and prostrated after the experience of yesterday. Her pulse had fallen to 132, but was much fuller, and felt satisfactory. After I left her she took five doses of the medicine, all before 2 A.M., about which time she fell asleep, and after waking she felt that she did not require any more. She told me that she had once before had a similar attack, and had been attended by a physician hastily summoned in the neighborhood, who seemed, she said, even more scared than I had shown myself, to which I could only reply, that I could well believe it.

November 28th. When I called the next day, she met me in the store, feeling perfectly well. Her pulse was then 72, full, strong and regular.

DR. F. E. CHATARD, JR., related some particulars of a case of rapid heart in a young hysterical woman, in which the rapidity of pulsation varied from 150 to 170 during a period of four weeks. The patient at the same time was suffering from hysterical aphonia and other marked phenomena of similar origin. There was no rise of temperature and no pulmonary or cardiac lesion to account for the condition. As she returned to a more normal and healthy state of her nervous system, it was found that there was a reduplication of each heartbeat, and each alternate beat became gradually weaker and weaker, and was ultimately eliminated, leaving her normal pulse about 75.

DR. WM. E. MOSELEY related the case of a lad in the Boston House of Correction, whose pulse became very rapid, about 180, soon after being placed in a dark cell. The rapidity of the pulse was apparently due entirely to the prisoner's nervous condition, and subsided promptly upon his being taken out of solitary confinement. Somewhat akin to this class of cases, was that of a lady, who two or three days after an abortion, had a *nervous chill*, during which the temperature reached over 107° F., and the pulse was correspondingly rapid. In

the course of an hour pulse and temperature were practically normal.

DR. GEO. W. MILTENBERGER said: One of the most remarkable and interesting cases bearing upon unusual rapidity of pulse which I have ever seen, I met with a few months since. On September 21st last I was called in consultation by my friend Dr. T., to see Mr. H., with him and another consultant, one of our most distinguished physicians, who had already seen him. Interested in the history of his case I spent at my first visit an hour in the examination. I found a man of about 56 years of age, large, robust, athletic, who, I was told, had been noted for his physical powers throughout his life. Many years of his life had been passed in mechanical pursuits, requiring great muscular strength, as well as endurance. There was no history of constitutional taint, hereditary or acquired. He had been addicted to no vices, had not used liquor to any extent but had used tobacco, both smoking and chewing very freely. There was no albuminuria, there was no organic disease of the heart and lungs, there was no impairment of sensation or motion, and no mental affection whatever. For twenty years he had attacks of cardiac palpitation and irregularity at intervals, which were pretty promptly relieved by cardiac stimulants and nervines, and did not interfere with his usual avocations. Some two or three months before my visit, these attacks became aggravated and so repeated as to invalid him, and force him to withdraw from business. And now for the first time he had with them excessive and distressing dyspnea. At a still later period, some weeks before I saw him, the stomach became affected and he had with his paroxysms, nausea and occasional vomiting.

The attacks coming on every day or two, would now continue for several hours, and resisted every means for his relief, or the relief would be only partial and temporary.

All the nervines, sedatives, antispasmodics and heart tonics were tried but in vain. Nitro-glycerine was tried but without avail, nitrite of amyl at first seemed to afford a little relief but was afterwards useless. First heart, second lungs, third stomach, followed in sequence in this history. There being no organic disease of heart, lungs, stomach, liver or kidney, and the peripheral distributions of the pneumogastric all participating in regular sequence, the question of necessity arose was there any organic lesion central at its point of origin or along the course of its trunk. There was no alteration of sensation or motion, there was no mental aberration, there was no syphilis, there certainly was no neoplasms, which would have gone on for twenty years in this slow course without other special indications or results, there was no scrofulous tendency and no enlarged glands, along the course of the nerve. There was no evidence whatsoever of any intrathoracic or tumor or glands could produce such effect by pressure. I was forced to the conclusion that it was purely functional, affecting first the cardiac distribution, secondly the pulmonary and thirdly the gastric. The only cause to which I could attribute it was probably to the effect of excessive muscular effort in early and adult life, and the excessive use of tobacco, nicotine poisoning.

I had never seen such excessive results of tobacco. While he had used none for over two months, and despite the most careful and untiring treatment, his troubles had been exaggerated instead of being ameliorated. This was the result of my first visit, during which he was perfectly comfortable, pulse about 70 or 80, respiration normal, stomach quiet; he was cheerful, talked freely without distress, and was comparatively a well man. The next morning I accidentally met Dr. Tiffany on the street, who requested me to go at once to see his patient, who was then suffering an attack. I found him sitting on the side of his bed,

with his head supported on the back of a chair and had been thus for hours. His dyspnoea was excessive and most distressing, face pallid, pulse 200, not counted at the wrist, but with the ear close to the heart. With regard to this, there could be no mistake, as all three of us counted them in succession. There was persistent nausea and slight mucous vomiting. The following morning his pulse was 80, respiration normal, and his whole condition altered. And so, with these alternations, he continued as long as I saw him, and as far as I know, up to his death, which occurred some weeks after my last visit.

DR. THOMAS OPIE exhibited a patient with
FUNGOID GROWTH ON THE LEFT BREAST.

Mrs. F., forty-five years of age, married at twenty, and has had eleven full-term children and two abortions, her last pregnancy having ended four years ago. Her general health is poor and mental condition very much depressed. The growth began as a small nodule sixteen years ago, below the left nipple. She nursed her last child two years. A short time after weaning it, the tumor commenced to grow. On April 16th, 1888, Dr. A. L. Wolf, of Page County, Va., removed it when the size of a goose egg. Dr. Wolf writes that "after making the incision the tumor was readily enucleated by his knife handle and finger. The wound healed by the first intention and left only a slight scar. Four months afterwards, a second tumor came, about two inches from the seat of the first one, and in six weeks attained to a growth which weighed four pounds. The mass removed embraced the whole gland. The incision again healed by first intention, but the scar did not become so pale and small as did the other. About six weeks after the second operation there arose a sleek, purplish-red projection, which was followed by others, which soon bursted through the skin, with the present result: medullary sarcoma or fungus haematoxides."

Mrs. F. was admitted into the hospital

December 11th. The tumor, the odor of which was unbearable, was dressed twice a day with surgeon's wool, after washing with a solution of permanganate of potash 5j to Oj.

The fungoid growth was removed December 18th. An attempt was made to effect it with the thermo-cautery, but it was quickly decided, in view of the haemorrhage, to circumscribe and rapidly excise it, with the scalpel. An incision through the sound skin, an inch outside the diseased tissues, was made. The whole of the pectoralis major muscle under the mass was removed. The arteries were caught up as soon as severed, with catch forceps. The wound left, measured nine inches from above downwards and seven from side to side. During the latter part of the operation, the patient sank from loss of blood or shock and was given hypodermes of whisky. She rallied satisfactorily, the wound was dressed and she was put to bed. The pulse rate and temperature from the day after the operation to the time of her death on the tenth day, were as follows:

	A.M.	P.M.
	Pulse.	Temp.
	Pulse.	Temp.
Dec. 19th, 1888.	110	100
20th, "	116	100.2
21st, "	108	99.5
22d, "	116	99.4
23d, "	137	99.4
24th, "	128	98.5
25th, "	130	99.5
26th, "	130	103
		140
		103

On the second day after the operation the patient became very delirious, and continued in an insane condition until death ensued.

Billroth in his recent work on "Diseases of the Mammary Gland," page 63, "Wood's Library," 1888, says the four cases reported (by him) show how little infectious soft sarcoma of the mamma depends on age. The cases were in the 14th, 31st, 42d and 65th years. He says the differentiation of soft sarcoma from soft carcinoma and the different forms of soft sarcoma from one another, is principally and in part exclusively based on ex-

act microscopic examination and is the result of the progress made in the last ten years. He calls attention to errors of Velpeau, Erichsen, Gross and others in classifying such cases as these in the category of "encephaloids."

The following report was made by Dr. Keirle after examination of a specimen of the growth under the microscope: "The tumor is a recurrence after removal; in gross it looks like white brain matter (medullary encephaloid), with numerous fine red streaks; in consistence it is so soft as to easily break up on handling. Microscopically, it is made up of medium-sized spindle cells, with homogeneous, gelatinous intercellular substance. Much of this structure is undergoing fatty degeneration; the mammary tubes are full of proliferating large roundish cells, so that a lumen cannot be discovered. On cross section these tubes somewhat resemble epithelial nests (perlkrebs, globes epidermiques); scattered throughout the section are numerous large, round cells with large nuclei; also numerous vessels with spindle cell walls.

"The growth is a sarcoma with epithelial proliferation, in reference to which the following is quoted from Billroth's Surg. Syd. Soc. Ed., vol. ii, p. 426: 'There is reason to fear general infection, and besides this, a transformation into cancer in consequence of epithelial proliferation becomes possible.'"

BOOK REVIEWS.

ALBUMINURIA. By THOMAS GRAINGER STEWART, M.D., Fellow of the Royal College of Physicians, Edinburgh; Hon. Fellow of King and Queen's College of Physicians, Ireland; Physician in Ordinary to Her Majesty the Queen for Scotland. Pp. xi. and 250. New York: William Wood & Co. Chicago: W. T. Keener.

This book comprises a series of clinical lectures delivered during the past two years at the University of Edinburgh. They embody the views which the author at present entertains regarding the clinical questions discussed in his well known

work upon "Bright's Diseases of the Kidneys"—the last edition of which appeared in 1871.

The first chapter is devoted to the consideration of the various proteids found in the urine, together with their various tests, qualitative and quantitative.

Of the more recent tests for albumin in the urine, in point of delicacy the author gives the preference to picric acid. But he wisely remarks "delicacy is not the only quality required of a test. Indeed, it may be too delicate for clinical purposes."

In the second chapter Professor Stewart considers the "Incidence of Albuminuria among the Presumably Healthy." From the number of observations, and the care with which they have been conducted, some very important conclusions have been reached, more especially with regard to the relations of albuminuria to life assurance.

Systematic observation of the urine of 505 presumably healthy individuals was made. Some of the more important deductions reached through these researches are as follows:

(a). "That albuminuria is much more common among presumably healthy people than was formerly supposed, being demonstrable by delicate tests in nearly one-third of those examined."

(b). "That the existence of albuminuria is not of itself sufficient ground for the rejection of a proposal for life insurance."

(c). "That traces of albumin are not unfrequently present in the urine passed during the first days of life."

(d). "That excepting as above shown, the frequency of albuminuria increases as life advances, being rare in children and young adults, and common in men at or above sixty years of age."

In the third chapter the author considers the "Incidence of Albuminuria among the Sick" and from a large number of observations concludes that "cases of Bright's disease do not account for one-half of the cases of albuminuria."

The "Theory of Albuminuria" is ably discussed in chapter four. The author lays much stress upon inflammatory changes in the epithelium of the renal tubules as a frequent cause. He believes, however, that increased blood-pressure, as well as some conditions of the blood, favors its occurrence.

The succeeding five chapters are devoted to the consideration of the various organic diseases of the kidneys which are accompanied by albuminuria. The author's views upon these subjects are already very widely known through his excellent work on Bright's diseases. We may add, however, that the present matter is brought very fully up to date.

In the eleventh chapter the author discusses the important question of "functional albuminuria" in its various forms. In regard to the prognosis of these cases, the author believes that "Paroxysmal Albuminuria" has a slight tendency to culminate in renal disease. In "Dietetic Albuminuria" and "Albuminuria from Muscular Exertion" there is less tendency to such sequel. In "Simple Persistent Albuminuria" the prognosis is least hopeful, but in the author's experience "so considerable a proportion of cases have gone on for long periods" without culminating in organic renal disease that he is confident an unfavorable termination of these cases must be rare.

The excretion of the normal proportion of solids by the kidneys, and the absence of vascular changes, the author considers—we believe very wisely—to be the most weighty evidences against the existence of serious damage to the organs.

The last two chapters of the book deal with the management of albuminuria, including the diet. In the author's experience "raw egg albumin" when introduced into the stomach induces albuminuria, "that the albumin is always small in quantity," that "it disappears when ordinary diet is resumed," and that it is not egg albumin but serum albumin which is discharged. With regard to the use of cheese the author concludes that "when eaten in reasonable amount it has little or no effect in producing albuminuria in healthy people."

In organic renal disease the author does not expect much from the use of medicines save to combat complications. In albuminuria due to cardiac disease, however, "most strikingly good effects follow the use of appropriate medicines" such as digitalis, strophanthus, caffein, convallaria majolis, etc. In "functional albuminuria" the author has found the best results from the use of arsenic, chloride of ammonium and iron.

Professor Stewart's book may be looked upon as a valuable contribution to the literature of albuminuria. His lengthy experience as a clinical teacher has enabled him to present the matter in a most practical form, and his industrious tabulation of statistics of the large number of cases observed greatly facilitates the study of the subject by the student and practitioner, while his well-known reputation as an author on renal diseases lends very great weight to the conclusions which he so clearly and pleasantly presents. We heartily recommend the work to all those who wish to make themselves acquainted with the most recent advances on the subject of albuminuria.

C. W. P.

ELECTRICITY IN THE DISEASES OF WOMEN, WITH SPECIAL REFERENCE TO THE EMPLOYMENT OF STRONG CURRENTS. By G. BETTON MASSEY, M.D. Pp. viii and 210. 12mo. Philadelphia: F. A. Davis. 1889. Price, \$1.50 net.

There will always be found some practitioners in any department of medicine who are so suc-

cessful in the use of their own methods, that they are eminently satisfied with them and are unwilling to employ any others. And thus there are gynaecologists who succeed better with other agents and condemn electricity as the resource of charlatans or unskillful operators. But the world moves, and from each of the fashions of its day something is left which is a valuable contribution to the resources of medicine, and those who will carefully read what the author of this little book on Electricity in Diseases of Women has to say, will realize that that agent has in some particulars passed its experimental stage and is capable of accurate and satisfactory application.

The book has many good points. Its descriptions of apparatus and methods are perfectly clear and accurate, and will enable any physician to use even strong currents intelligently and safely. For his own current controller, an extremely simple and efficient instrument, he is entitled to the thanks of the profession.

The limitations as well as the uses of the agent as they are at present known are clearly stated. The author's style is exceptionally clear and terse, and the arrangement of the subject matter in the book is excellent. The illustrations are well chosen. And lastly, although amply covering the ground the book is small. E. W.

BOOKS RECEIVED.

Essentials of Surgery. By Edward Martin, A.M., M.D.

Essentials of Anatomy. By Charles B. Nancarrow, M.D.

Essentials of Medical Chemistry. By Lawrence Wolff, M.D.

Essentials of Obstetrics. By William Easterly Ashton, M.D.

The Waters of Plombières, Vosges. By Dr. Battentuit.

Clinical Lectures on Albuminuria. By Thomas Grainger Stewart, M.D., Edinburgh.

Clinical Atlas of Venereal and Skin Disease. Parts III. and IV. By Robert W. Taylor, M.D.

The Vest-Pocket Anatomist. By C. Henri Leonard, M.D.

Transactions of the Association of American Physicians, Vol. III.

The Pathology and Treatment of Displacements of the Uterus. By Dr. B. S. Schultze.

The Annual Report of the Supervising Surgeon General of the Marine Hospital Service, 1888.

Guy's Hospital Reports, Vol. XLV.

Hand-Book of Materia Medica, Pharmacy and Therapeutics. By Cuthbert Bowen, M.D., B. A.

Wood's Medical and Surgical Monographs. Vol. I, Nos. 1 and 2.

Exploration of the Chest in Health and Disease. By Stephen Smith Burt, M.D.

International Pocket Medical Formulary.